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Generalization of the Dao-Humenberger-Schuppar-De Villiers Theorem

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1. Introduction

The Dao-Humenberger-Schuppar-De Villiers theorem [1] is a generalization of Napoleon's theorem. It demonstrates the existence of three nontrivial equilateral triangles. The first two triangles were discussed by Dao, and the last one was discussed by Humenberger, Schuppar, and de Villiers. Here, we will generalize this theorem using ideas from [2], but will present it in the form of three different theorems in order to simplify the usage of points and diagrams.

2. Results

Theorem 2.1. *Let $A, B, C, D, E,$ and F form a hexagon (oriented clockwise).*
Let AFG form an external (respectively internal) equilateral triangle.
Let BCI form an external (respectively internal) equilateral triangle.
Let DEH form an external (respectively internal) equilateral triangle.
Let J be some point in the plane.
Let K be a point on line AJ.
Let L be the point on line BJ such that $BL : JL = AK : JK$.
Let M be the point on line CJ such that $CM : JM = AK : JK$.
Let N be the point on line DJ such that $DN : JN = AK : JK$.
Let O be the point on line EJ such that $EO : JO = AK : JK$.
Let P be the point on line FJ such that $FP : JP = AK : JK$.
Let Q be the point on line GJ such that $GQ : JQ = AK : JK$.

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Let R be the point on line HJ such that $HR : JR = AK : JK$.
Let S be the point on line IJ such that $IS : JS = AK : JK$.
Let T be the midpoint of K and L.
Let U be the midpoint of K and R.
Let V be the midpoint of L and R.
Let lines AV, BU, and HT intersect at point W.
Let Z be the midpoint of O and P.
Let A_1 be the midpoint of P and S.
Let B_1 be the midpoint of O and S.
Let lines IZ, EA_1, and FB_1 intersect at point C_1.
Let D_1 be the midpoint of M and N.
Let E_1 be the midpoint of M and Q.
Let F_1 be the midpoint of N and Q.
Let lines GD_1, DE_1, and CF_1 intersect at point G_1.
Then points W, C_1, and G_1 form an equilateral triangle.

Proof. Without loss of generality, we will work in Cartesian coordinates.
A has coordinates $(0, 0)$.
B has coordinates $(1, 0)$.
C has coordinates (x_C, y_C).
D has coordinates (x_D, y_D).
E has coordinates (x_E, y_E).
F has coordinates (x_F, y_F).
We split the proof into the cases where the triangles are external and where they are internal.
Case 1: the triangles are external.
G has coordinates $(x_F/2 - (3^{1/2} * y_F)/2, y_F/2 + (3^{1/2} * x_F)/2)$.
H has coordinates $(x_E/2 + x_D/2 + (3^{1/2} * y_E)/2 - (3^{1/2} * y_D)/2, y_E/2 + y_D/2 - (3^{1/2} * (x_E - x_D))/2)$.
I has coordinates $(x_C/2 + (3^{1/2} * y_C)/2 + 1/2, y_C/2 - (3^{1/2} * (x_C - 1))/2)$.
J has coordinates (x_J, y_J).
K has coordinates $(x_K, x_K * y_J/x_J)$.
L has coordinates $(((x_J - 1) * x_K)/x_J + 1, x_K * y_J/x_J)$.
M has coordinates $(((x_J - x_C) * x_K)/x_J + x_C, (x_K * y_J + (x_J - x_K) * y_C)/x_J)$.
N has coordinates $(((x_J - x_D) * x_K)/x_J + x_D, (x_K * y_J + (x_J - x_K) * y_D)/x_J)$.
O has coordinates $(((x_J - x_E) * x_K)/x_J + x_E, (x_K * y_J + (x_J - x_K) * y_E)/x_J)$.
P has coordinates $(((x_J - x_F) * x_K)/x_J + x_F, (x_K * y_J + (x_J - x_K) * y_F)/x_J)$.
Q has coordinates
$((x_K * (((3^{1/2}) * y_F)/2 + x_J - x_F/2))/x_J + (x_F - (3^{1/2}) * y_F)/2, (x_K * y_J + (x_J - x_K) * (y_F/2 + ((3^{1/2}) * x_F)/2))/x_J)$.
R has coordinates
$((x_J * ((3^{1/2}) * y_E - (3^{1/2}) * y_D + x_E + x_D) + x_K * (-(3^{1/2}) * y_E + (3^{1/2}) * y_D + 2 * x_J - x_E - x_D))/(2 * x_J), (2 * x_K * y_J + (x_J - x_K) * (y_E + y_D - (3^{1/2}) * (x_E - x_D)))/(2 * x_J))$.
S has coordinates
$((x_J * ((3^{1/2}) * y_C + x_C + 1) + x_K * (-(3^{1/2}) * y_C + 2 * x_J - x_C - 1))/(2 * x_J), (x_K * y_J + (x_J - x_K) * (y_C/2 - ((3^{1/2}) * (x_C - 1))/2))/x_J)$.
T has coordinates
$((((x_J - 1) * x_K)/x_J + x_K + 1)/2, (x_K * y_J)/x_J)$.
U has coordinates

$((x_J*((3^{1/2})*y_E-(3^{1/2})*y_D+2*x_K+x_E+x_D)+x_K*(-(3^{1/2})*y_E+(3^{1/2})*y_D+2*x_J-x_E-x_D))/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_E+y_D-3^{1/2}*(x_E-x_D)))/(4*x_J))$.
V has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D-(4*x_J-x_E-x_D-2)*x_K-(x_E+x_D+2)*x_J)/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_E+y_D-3^{1/2}*(x_E-x_D)))/(4*x_J))$.
W has coordinates
$((2*x_J-2*x_K+x_D*x_J-x_D*x_K+x_E*x_J-x_E*x_K+4*x_J*x_K-3^{1/2}*x_J*y_D+3^{1/2}*x_J*y_E+3^{1/2}*x_K*y_D-3^{1/2}*x_K*y_E)/(2*(3*x_J-x_K)), (x_J*y_D+x_J*y_E-x_K*y_D-x_K*y_E+4*x_K*y_J+3^{1/2}*x_D*x_J-3^{1/2}*x_D*x_K-3^{1/2}*x_E*x_J+3^{1/2}*x_E*x_K)/(2*(3*x_J-x_K)))$.
Z has coordinates
$(((2*x_J-x_F-x_E)*x_K+(x_F+x_E)*x_J)/(2*x_J), (2*x_K*y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_E)/(2*x_J))$.
A_1 has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*x_F-x_C-1)*x_K-(2*x_F+x_C+1)*x_J)/(4*x_J), (4*x_K*y_J+2*(x_J-x_K)*y_F+(x_J-x_K)*(y_C-3^{1/2}*(x_C-1)))/(4*x_J))$.
B_1 has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*x_E-x_C-1)*x_K-(2*x_E+x_C+1)*x_J)/(4*x_J), (4*x_K*y_J+2*(x_J-x_K)*y_E+(x_J-x_K)*(y_C-3^{1/2}*(x_C-1)))/(4*x_J))$.
C_1 has coordinates
$((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J)), -(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))$.
D_1 has coordinates
$(((2*x_J-x_D-x_C)*x_K+(x_D+x_C)*x_J)/(2*x_J), (2*x_K*y_J+(x_J-x_K)*y_D+(x_J-x_K)*y_C)/(2*x_J))$.
E_1 has coordinates
$((3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_C)*x_K+(x_F+2*x_C)*x_J)/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_F+3^{1/2}*x_F)+2*(x_J-x_K)*y_C)/(4*x_J))$.
F_1 has coordinates
$((3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_D)*x_K+(x_F+2*x_D)*x_J)/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_F+3^{1/2}*x_F)+2*(x_J-x_K)*y_D)/(4*x_J))$.
G_1 has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J)), -(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J)))$.
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W-x_{C_1})^2+(y_W-y_{C_1})^2-(x_W-x_{G_1})^2-(y_W-y_{G_1})^2$
$=(((2*x_J-2*x_K+x_D*x_J-x_D*x_K+x_E*x_J-x_E*x_K+4*x_J*x_K-3^{1/2}*x_J*y_D+3^{1/2}*x_J*y_E+3^{1/2}*x_K*y_D-3^{1/2}*x_K*y_E)/(2*(3*x_J-x_K)))-((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2+$
$(((x_J*y_D+x_J*y_E-x_K*y_D-x_K*y_E+4*x_K*y_J+3^{1/2}*x_D*x_J-3^{1/2}*x_D*x_K-3^{1/2}*x_E*x_J+3^{1/2}*x_E*x_K)/(2*(3*x_J-x_K)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2-$
$(((2*x_J-2*x_K+x_D*x_J-x_D*x_K+x_E*x_J-x_E*x_K+4*x_J*x_K-3^{1/2}*x_J*y_D+3^{1/2}*x_J*y_E+3^{1/2}*x_K*y_D-3^{1/2}*x_K*y_E)/(2*(3*x_J-x_K)))-(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))^2-$
$(((x_J*y_D+x_J*y_E-x_K*y_D-x_K*y_E+4*x_K*y_J+3^{1/2}*x_D*x_J-3^{1/2}*x_D*x_K-3^{1/2}*x_E*x_J+3^{1/2}*x_E*x_K)/(2*(3*x_J-x_K)))-(-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-$

$x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J))))^2=0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that
$(x_W-x_{C_1})^2+(y_W-y_{C_1})^2-(x_{C_1}-x_{G_1})^2-(y_{C_1}-y_{G_1})^2$
$=(((2*x_J-2*x_K+x_D*x_J-x_D*x_K+x_E*x_J-x_E*x_K+4*x_J*x_K-3^{1/2}*x_J*y_D+3^{1/2}*x_J*y_E+3^{1/2}*x_K*y_D-3^{1/2}*x_K*y_E)/(2*(3*x_J-x_K)))-((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2+(((x_J*y_D+x_J*y_E-x_K*y_D-x_K*y_E+4*x_K*y_J+3^{1/2}*x_D*x_J-3^{1/2}*x_D*x_K-3^{1/2}*x_E*x_J+3^{1/2}*x_E*x_K)/(2*(3*x_J-x_K)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2-(((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J))))^2=0$ as desired.

Case 2: the triangles are internal.
G has coordinates $(x_F/2+(3^{1/2}*y_F)/2, y_F/2-(3^{1/2}*x_F)/2)$.
H has coordinates
$(x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2, y_E/2+y_D/2+(3^{1/2}*(x_E-x_D))/2)$.
I has coordinates $(x_C/2-(3^{1/2}*y_C)/2+1/2, y_C/2+(3^{1/2}*(x_C-1))/2)$.
J has coordinates (x_J, y_J).
K has coordinates $(x_K, x_K*y_J/x_J)$.
L has coordinates $(((x_J-1)*x_K)/x_J+1, x_K*y_J/x_J)$.
M has coordinates $(((x_J-x_C)*x_K)/x_J+x_C, (x_K*y_J+(x_J-x_K)*y_C)/x_J)$.
N has coordinates $(((x_J-x_D)*x_K)/x_J+x_D, (x_K*y_J+(x_J-x_K)*y_D)/x_J)$.
O has coordinates $(((x_J-x_E)*x_K)/x_J+x_E, (x_K*y_J+(x_J-x_K)*y_E)/x_J)$.
P has coordinates $(((x_J-x_F)*x_K)/x_J+x_F, (x_K*y_J+(x_J-x_K)*y_F)/x_J)$.
Q has coordinates
$(((x_J-(x_F/2+(3^{1/2}*y_F)/2))*x_K)/x_J+(x_F/2+(3^{1/2}*y_F)/2), (x_K*y_J+(x_J-x_K)*(y_F/2-(3^{1/2}*x_F)/2))/x_J)$.
R has coordinates
$(((x_J-(x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2))*x_K)/x_J+x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2, (x_K*y_J+(x_J-x_K)*(y_E/2+y_D/2+(3^{1/2}*(x_E-x_D))/2))/x_J)$.
S has coordinates
$(((x_J-(x_C/2-(3^{1/2}*y_C)/2+1/2))*x_K)/x_J+x_C/2-(3^{1/2}*y_C)/2+1/2, (x_K*y_J+(x_J-x_K)*(y_C/2+(3^{1/2}*(x_C-1))/2))/x_J)$.
T has coordinates
$((1/2)(x_K+((x_J-1)*x_K)/x_J+1), x_K*y_J/x_J)$.
U has coordinates
$((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D)*x_K+(x_E+x_D)*x_J)/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_E+y_D+3^{1/2}*(x_E-x_D)))/(4*x_J))$.
V has coordinates
$((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)/(4*x_J), (4*x_K*y_J+(x_J-x_K)*(y_E+y_D+3^{1/2}*(x_E-x_D)))/(4*x_J))$.
W has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)/(2*(x_K-3*x_J)), -(4*x_K*y_J-(x_K-x_J)*y_E-(x_K-x_J)*y_D-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))$.

Z has coordinates
$(((2*x_J - x_F - x_E)*x_K + (x_F + x_E)*x_J)/(2*x_J), (2*x_K*y_J + (x_J - x_K)*y_F + (x_J - x_K)*y_E)/(2*x_J))$.
A_1 has coordinates
$((3^{1/2}*(x_K - x_J)*y_C + (4*x_J - 2*x_F - x_C - 1)*x_K + (2*x_F + x_C + 1)*x_J)/(4*x_J), (4*x_K*y_J + 2*(x_J - x_K)*y_F + (x_J - x_K)*(y_C + 3^{1/2}*(x_C - 1)))/(4*x_J))$.
B_1 has coordinates
$((3^{1/2}*(x_K - x_J)*y_C + (4*x_J - 2*x_E - x_C - 1)*x_K + (2*x_E + x_C + 1)*x_J)/(4*x_J), (4*x_K*y_J + 2*(x_J - x_K)*y_E + (x_J - x_K)*(y_C + 3^{1/2}*(x_C - 1)))/(4*x_J))$.
C_1 has coordinates
$(-(3^{1/2}*(x_K - x_J)*y_C + (4*x_J - 2*(x_F + x_E) - x_C - 1)*x_K + (2*(x_F + x_E) + x_C + 1)*x_J)/(2*(x_K - 3*x_J)), -(4*x_K*y_J - 2*(x_K - x_J)*y_F - 2*(x_K - x_J)*y_E - (x_K - x_J)*y_C - 3^{1/2}*(x_C - 1)*x_K + 3^{1/2}*(x_C - 1)*x_J)/(2*(x_K - 3*x_J)))$.
D_1 has coordinates
$(((2*x_J - x_D - x_C)*x_K + (x_D + x_C)*x_J)/(2*x_J), (2*x_K*y_J + (x_J - x_K)*y_D + (x_J - x_K)*y_C)/(2*x_J))$.
E_1 has coordinates
$(((x_K*(-(3^{1/2}*y_F)/2 + x_J - x_F/2) + (x_J - x_C)*x_K)/x_J + (3^{1/2}*y_F + x_F)/2 + x_C)/2, (4*x_K*y_J + (x_J - x_K)*(y_F - 3^{1/2}*x_F) + 2*(x_J - x_K)*y_C)/(4*x_J))$.
F_1 has coordinates
$(((x_K*(-(3^{1/2}*y_F)/2 + x_J - x_F/2) + (x_J - x_D)*x_K)/x_J + (3^{1/2}*y_F + x_F)/2 + x_D)/2, (4*x_K*y_J + (x_J - x_K)*(y_F - 3^{1/2}*x_F) + 2*(x_J - x_K)*y_D)/(4*x_J))$.
G_1 has coordinates
$((3^{1/2}*(x_K - x_J)*y_F - (4*x_J - x_F - 2*(x_D + x_C))*x_K - (x_F + 2*(x_D + x_C))*x_J)/(2*(x_K - 3*x_J)), -(4*x_K*y_J - (x_K - x_J)*y_F - 2*(x_K - x_J)*y_D - 2*(x_K - x_J)*y_C + 3^{1/2}*x_F*x_K - 3^{1/2}*x_F*x_J)/(2*(x_K - 3*x_J)))$.
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_W - x_{G_1})^2 - (y_W - y_{G_1})^2$
$= ((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-(x_K-x_J)*y_E-(x_K-x_J)*y_D-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2-((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*(x_D+x_C))*x_K-(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J-(x_K-x_J)*y_E-(x_K-x_J)*y_D-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J))))^2 = 0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_{C_1} - x_{G_1})^2 - (y_{C_1} - y_{G_1})^2$
$= ((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-(x_K-x_J)*y_E-(x_K-x_J)*y_D-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2-((-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*(x_D+x_C))*x_K-(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))^2-$

$((-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E-(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J))))^2=0$
as desired. □

Theorem 2.2. *Let $A, B, C, D, E,$ and F form a hexagon (oriented clockwise).*
Let AFG form an external (respectively internal) equilateral triangle.
Let BCI form an external (respectively internal) equilateral triangle.
Let DEH form an external (respectively internal) equilateral triangle.
Let J be some point in the plane.
Let K be a point on line AJ.
Let L be the point on line BJ such that $BL : JL = AK : JK$.
Let M be the point on line CJ such that $CM : JM = AK : JK$.
Let N be the point on line DJ such that $DN : JN = AK : JK$.
Let O be the point on line EJ such that $EO : JO = AK : JK$.
Let P be the point on line FJ such that $FP : JP = AK : JK$.
Let Q be the point on line GJ such that $GQ : JQ = AK : JK$.
Let R be the point on line HJ such that $HR : JR = AK : JK$.
Let S be the point on line IJ such that $IS : JS = AK : JK$.
Let T be the midpoint of P and R.
Let U be the midpoint of M and R.
Let V be the midpoint of M and P.
Let lines $CT, FU,$ and HV intersect at point W.
Let Z be the midpoint of O and Q.
Let A_1 be the midpoint of L and O.
Let B_1 the midpoint of L and Q.
Let lines $BZ, GA_1,$ and EB_1 intersect at point C_1.
Let D_1 be the midpoint of K and N.
Let E_1 be the midpoint of K and S.
Let F_1 be the midpoint of N and S.
Let lines $ID_1, AF_1,$ and DE_1 intersect at point G_1.
Then points $W, C_1,$ and G_1 form an equilateral triangle.

Proof. Without loss of generality, we will work in Cartesian coordinates.
A has coordinates $(0, 0)$.
B has coordinates $(1, 0)$.
C has coordinates (x_C, y_C).
D has coordinates (x_D, y_D).
E has coordinates (x_E, y_E).
F has coordinates (x_F, y_F).
We split the proof into the cases where the triangles are external and where they are internal.
Case 1: the triangles are external.
G has coordinates $(x_F/2 - (3^{1/2} * y_F)/2, y_F/2 + (3^{1/2} * x_F)/2)$.
H has coordinates $(x_E/2 + x_D/2 + (3^{1/2} * y_E)/2 - (3^{1/2} * y_D)/2, y_E/2 + y_D/2 - (3^{1/2} * (x_E - x_D))/2)$.
I has coordinates $(x_C/2 + (3^{1/2} * y_C)/2 + 1/2, y_C/2 - (3^{1/2} * (x_C - 1))/2)$.
J has coordinates (x_J, y_J).
K has coordinates $(x_K, x_K * y_J/x_J)$.

L has coordinates $(((x_J-1)*x_K)/x_J+1, x_K*y_J/x_J)$.
M has coordinates $(((x_J-x_C)*x_K)/x_J+x_C, (x_K*y_J+(x_J-x_K)*y_C)/x_J)$.
N has coordinates $(((x_J-x_D)*x_K)/x_J+x_D, (x_K*y_J+(x_J-x_K)*y_D)/x_J)$.
O has coordinates $(((x_J-x_E)*x_K)/x_J+x_E, (x_K*y_J+(x_J-x_K)*y_E)/x_J)$.
P has coordinates $(((x_J-x_F)*x_K)/x_J+x_F, (x_K*y_J+(x_J-x_K)*y_F)/x_J)$.
Q has coordinates
$((x_K*(((3^{1/2})*y_F)/2+x_J-x_F/2))/x_J+(x_F-(3^{1/2})*y_F)/2, (x_K*y_J+(x_J-x_K)*(y_F/2+((3^{1/2})*x_F)/2))/x_J)$.
R has coordinates
$((x_J*((3^{1/2})*y_E-(3^{1/2})*y_D+x_E+x_D)+x_K*(-(3^{1/2})*y_E+(3^{1/2})*y_D+2*x_J-x_E-x_D))/(2*x_J), (2*x_K*y_J+(x_J-x_K)*(y_E+y_D-(3^{1/2})*(x_E-x_D)))/(2*x_J))$.
S has coordinates
$((x_J*((3^{1/2})*y_C+x_C+1)+x_K*(-(3^{1/2})*y_C+2*x_J-x_C-1))/(2*x_J), (x_K*y_J+(x_J-x_K)*(y_C/2-((3^{1/2})*(x_C-1))/2))/x_J)$.
T has coordinates
$((1/2)*(((x_J-x_F)*x_K)/x_J+x_F+(x_J*((3^{1/2})*y_E-(3^{1/2})*y_D+x_E+x_D)+x_K*(-(3^{1/2})*y_E+(3^{1/2})*y_D+2*x_J-x_E-x_D))/(2*x_J)), (2*(x_K*y_J+(x_J-x_K)*y_F)+2*x_K*y_J+(x_J-x_K)*(y_E+y_D-3^{1/2}*(x_E-x_D)))/(4*x_J))$.
U has coordinates
$((1/2)*(((x_J-x_C)*x_K)/x_J+x_C+(x_J*((3^{1/2})*y_E-(3^{1/2})*y_D+x_E+x_D)+x_K*(-(3^{1/2})*y_E+(3^{1/2})*y_D+2*x_J-x_E-x_D))/(2*x_J)), (2*(x_K*y_J+(x_J-x_K)*y_C)+2*x_K*y_J+(x_J-x_K)*(y_E+y_D-3^{1/2}*(x_E-x_D)))/(4*x_J))$.
V has coordinates
$((1/2)*(((x_J-x_C)*x_K)/x_J+x_C+((x_J-x_F)*x_K)/x_J+x_F), (1/2)*((x_K*y_J+(x_J-x_K)*y_C)/x_J+(x_K*y_J+(x_J-x_K)*y_F)/x_J))$.
W has coordinates
$((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D-(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)), -(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))$.
Z has coordinates
$((1/2)*((((x_J-x_E)*x_K)/x_J+x_E)+((x_K*(((3^{1/2})*y_F)/2+x_J-x_F/2))/x_J+(x_F-(3^{1/2})*y_F)/2)), (1/2)*(((x_K*y_J+(x_J-x_K)*y_E)/x_J)+((x_K*y_J+(x_J-x_K)*(y_F/2+((3^{1/2})*x_F)/2))/x_J)))$.
A_1 has coordinates
$((1/2)*((((x_J-1)*x_K)/x_J+1)+(((x_J-x_E)*x_K)/x_J+x_E)), (1/2)*((x_K*y_J/x_J)+((x_K*y_J+(x_J-x_K)*y_E)/x_J)))$.
B_1 has coordinates
$((1/2)*((((x_J-1)*x_K)/x_J+1)+((x_K*(((3^{1/2})*y_F)/2+x_J-x_F/2))/x_J+(x_F-(3^{1/2})*y_F)/2)), (1/2)*((x_K*y_J/x_J)+((x_K*y_J+(x_J-x_K)*(y_F/2+((3^{1/2})*x_F)/2))/x_J)))$.
C_1 has coordinates
$(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J)), -(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*x_K-6*x_J))$.
D_1 has coordinates
$((1/2)*(x_K+(((x_J-x_D)*x_K)/x_J+x_D)), (1/2)*((x_K*y_J/x_J)+((x_K*y_J+(x_J-x_K)*y_D)/x_J)))$.
E_1 has coordinates

$((1/2)*(x_K+((x_J*((3^{1/2})*y_C+x_C+1)+x_K*(-(3^{1/2})*y_C+2*x_J-x_C-1))/(2*x_J))),(1/2)*((x_K*y_J/x_J)+((x_K*y_J+(x_J-x_K)*(y_C/2-((3^{1/2})*(x_C-1))/2))/x_J)))$.
F_1 has coordinates
$((1/2)*((((x_J-x_D)*x_K)/x_J+x_D)+((x_J*((3^{1/2})*y_C+x_C+1)+x_K*(-(3^{1/2})*y_C+2*x_J-x_C-1))/(2*x_J))),(1/2)*(((x_K*y_J+(x_J-x_K)*y_D)/x_J)+((x_K*y_J+(x_J-x_K)*(y_C/2-((3^{1/2})*(x_C-1))/2))/x_J)))$.
G_1 has coordinates
$((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*x_D-x_C-1)*x_K-(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J)),-(4*x_K*y_J-2*(x_K-x_J)*y_D-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))$.
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W-x_{C_1})^2+(y_W-y_{C_1})^2-(x_W-x_{G_1})^2-(y_W-y_{G_1})^2$
$=(((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D-(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*x_K-6*x_J)))^2-(((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D-(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*x_D-x_C-1)*x_K-(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_D-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2=0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that
$(x_W-x_{C_1})^2+(y_W-y_{C_1})^2-(x_{C_1}-x_{G_1})^2-(y_{C_1}-y_{G_1})^2$
$=(((3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D-(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*x_K-6*x_J)))^2-((-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*x_D-x_C-1)*x_K-(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*x_K-6*x_J)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_D-(x_K-x_J)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2=0$ as desired.

Case 2: the triangles are internal.
G has coordinates $(x_F/2+(3^{1/2}*y_F)/2,y_F/2-(3^{1/2}*x_F)/2)$.
H has coordinates
$(x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2,y_E/2+y_D/2+(3^{1/2}*(x_E-x_D))/2)$.
I has coordinates $(x_C/2-(3^{1/2}*y_C)/2+1/2,y_C/2+(3^{1/2}*(x_C-1))/2)$.
J has coordinates (x_J,y_J).
K has coordinates $(x_K,x_K*y_J/x_J)$.
L has coordinates $(((x_J-1)*x_K)/x_J+1,x_K*y_J/x_J)$.
M has coordinates $(((x_J-x_C)*x_K)/x_J+x_C,(x_K*y_J+(x_J-x_K)*y_C)/x_J)$.

N has coordinates $(((x_J - x_D) * x_K)/x_J + x_D, (x_K * y_J + (x_J - x_K) * y_D)/x_J)$.
O has coordinates $(((x_J - x_E) * x_K)/x_J + x_E, (x_K * y_J + (x_J - x_K) * y_E)/x_J)$.
P has coordinates $(((x_J - x_F) * x_K)/x_J + x_F, (x_K * y_J + (x_J - x_K) * y_F)/x_J)$.
Q has coordinates
$(((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2), (x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J)$.
R has coordinates
$(((x_J-(x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2))*x_K)/x_J+x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2, (x_K*y_J+(x_J-x_K)*(y_E/2+y_D/2+(3^{1/2}*(x_E-x_D))/2))/x_J)$.
S has coordinates
$(((x_J - (x_C/2 - (3^{1/2} * y_C)/2 + 1/2)) * x_K)/x_J + x_C/2 - (3^{1/2} * y_C)/2 + 1/2, (x_K * y_J + (x_J - x_K) * (y_C/2 + (3^{1/2} * (x_C - 1))/2))/x_J)$.
T has coordinates
$((1/2) * ((((x_J - x_F) * x_K)/x_J + x_F) + (((x_J - (x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)) * x_K)/x_J + x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_F)/x_J) + ((x_K * y_J + (x_J - x_K) * (y_E/2 + y_D/2 + (3^{1/2} * (x_E - x_D))/2))/x_J)))$.
U has coordinates
$((1/2) * ((((x_J - x_C) * x_K)/x_J + x_C) + (((x_J - (x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)) * x_K)/x_J + x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_C)/x_J) + ((x_K * y_J + (x_J - x_K) * (y_E/2 + y_D/2 + (3^{1/2} * (x_E - x_D))/2))/x_J)))$.
V has coordinates
$((1/2) * ((((x_J - x_C) * x_K)/x_J + x_C) + (((x_J - x_F) * x_K)/x_J + x_F)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_C)/x_J) + ((x_K * y_J + (x_J - x_K) * y_F)/x_J)))$.
W has coordinates
$(-(3^{1/2} * (x_K - x_J) * y_E - 3^{1/2} * (x_K - x_J) * y_D + (4 * x_J - 2 * (x_F + x_C) - x_E - x_D) * x_K + (2 * (x_F + x_C) + x_E + x_D) * x_J)/(2 * (x_K - 3 * x_J)), -(4 * x_K * y_J - 2 * (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - 2 * (x_K - x_J) * y_C - 3^{1/2} * (x_E - x_D) * x_K + 3^{1/2} * (x_E - x_D) * x_J)/(2 * (x_K - 3 * x_J)))$.
Z has coordinates
$((1/2) * ((((x_J - x_E) * x_K)/x_J + x_E) + (((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2))), (1/2) * (((x_K * y_J + (x_J - x_K) * y_E)/x_J) + ((x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J)))$.
A_1 has coordinates
$((1/2) * ((((x_J - 1) * x_K)/x_J + 1) + (((x_J - x_E) * x_K)/x_J + x_E)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_E)/x_J)))$.
B_1 has coordinates
$((1/2) * ((((x_J - 1) * x_K)/x_J + 1) + (((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2))), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J)))$.
C_1 has coordinates
$((3^{1/2} * (x_K - x_J) * y_F - (4 * x_J - x_F - 2 * x_E - 2) * x_K - (x_F + 2 * x_E + 2) * x_J)/(2 * (x_K - 3 * x_J)), -(4 * x_K * y_J + (x_J - x_K) * y_F + (2 * x_J - 2 * x_K) * y_E + 3^{1/2} * x_F * x_K - 3^{1/2} * x_F * x_J)/(2 * x_K - 6 * x_J))$.
D_1 has coordinates
$((1/2) * (x_K + (((x_J - x_D) * x_K)/x_J + x_D)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_D)/x_J)))$.
E_1 has coordinates
$((1/2)*(x_K+(((x_J-(x_C/2-(3^{1/2}*y_C)/2+1/2))*x_K)/x_J+x_C/2-(3^{1/2}*y_C)/2+1/2)), (1/2)*((x_K*y_J/x_J)+((x_K*y_J+(x_J-x_K)*(y_C/2+(3^{1/2}*(x_C-1))/2))/x_J)))$.

F_1 has coordinates
$((1/2) * ((((x_J - x_D) * x_K)/x_J + x_D) + (((x_J - (x_C/2 - (3^{1/2} * y_C)/2 + 1/2)) * x_K)/x_J + x_C/2 - (3^{1/2} * y_C)/2 + 1/2)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_D)/x_J) + ((x_K * y_J + (x_J - x_K) * (y_C/2 + (3^{1/2} * (x_C - 1))/2))/x_J)))$.
G_1 has coordinates
$(-(3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - 2 * x_D - x_C - 1) * x_K + (2 * x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J)), -(4 * x_K * y_J - 2 * (x_K - x_J) * y_D - (x_K - x_J) * y_C - 3^{1/2} * (x_C - 1) * x_K + 3^{1/2} * (x_C - 1) * x_J)/(2 * (x_K - 3 * x_J)))$.
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_W - x_{G_1})^2 - (y_W - y_{G_1})^2$
$= ((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*x_E-2)*x_K-(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*x_K-6*x_J)))^2-((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*x_D-x_C-1)*x_K+(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J-2*(x_K-x_J)*y_D-(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2 = 0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_{C_1} - x_{G_1})^2 - (y_{C_1} - y_{G_1})^2$
$= ((-(3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J)/(2*(x_K-3*x_J)))-((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*x_E-2)*x_K-(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J))))^2+((-(4*x_K*y_J-2*(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*(x_E-x_D)*x_K+3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)))-(-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*x_K-6*x_J)))^2-(((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*x_E-2)*x_K-(x_F+2*x_E+2)*x_J)/(2*(x_K-3*x_J)))-(-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*x_D-x_C-1)*x_K+(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J))))^2-((-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*x_K-6*x_J))-(-(4*x_K*y_J-2*(x_K-x_J)*y_D-(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))))^2 = 0$
as desired. □

Theorem 2.3. *Let $A, B, C, D, E,$ and F form a hexagon (oriented clockwise).*
Let AFG form an external (respectively internal) equilateral triangle.
Let BCI form an external (respectively internal) equilateral triangle.
Let DEH form an external (respectively internal) equilateral triangle.
Let J be some point in the plane.
Let K be a point on line AJ.
Let L be the point on line BJ such that $BL : JL = AK : JK$.
Let M be the point on line CJ such that $CM : JM = AK : JK$.
Let N be the point on line DJ such that $DN : JN = AK : JK$.
Let O be the point on line EJ such that $EO : JO = AK : JK$.
Let P be the point on line FJ such that $FP : JP = AK : JK$.
Let Q be the point on line GJ such that $GQ : JQ = AK : JK$.
Let R be the point on line HJ such that $HR : JR = AK : JK$.

Let S be the point on line IJ such that $IS : JS = AK : JK$.
Let T be the midpoint of Q and S.
Let U be the midpoint of Q and R.
Let V be the midpoint of R and S.
Let lines HT, IU, and GV intersect at point W.
Let Z be the midpoint of K and M.
Let A_1 be the midpoint of M and O.
Let B_1 the midpoint of K and O.
Let lines EZ, AA_1, and CB_1 intersect at point C_1.
Let D_1 be the midpoint of L and P.
Let E_1 be the midpoint of N and P.
Let F_1 be the midpoint of L and N.
Let lines BE_1, DD_1, and FF_1 intersect at point G_1.
Then points W, C_1, and G_1 form an equilateral triangle.

Proof. Without loss of generality, we will work in Cartesian coordinates.
A has coordinates $(0, 0)$.
B has coordinates $(1, 0)$.
C has coordinates (x_C, y_C).
D has coordinates (x_D, y_D).
E has coordinates (x_E, y_E).
F has coordinates (x_F, y_F).
We split the proof into the cases where the triangles are external and where they are internal.
Case 1: the triangles are external.
G has coordinates $(x_F/2 - (3^{1/2} * y_F)/2, y_F/2 + (3^{1/2} * x_F)/2)$.
H has coordinates $(x_E/2 + x_D/2 + (3^{1/2} * y_E)/2 - (3^{1/2} * y_D)/2, y_E/2 + y_D/2 - (3^{1/2} * (x_E - x_D))/2)$.
I has coordinates $(x_C/2 + (3^{1/2} * y_C)/2 + 1/2, y_C/2 - (3^{1/2} * (x_C - 1))/2)$.
J has coordinates (x_J, y_J).
K has coordinates $(x_K, x_K * y_J/x_J)$.
L has coordinates $(((x_J - 1) * x_K)/x_J + 1, x_K * y_J/x_J)$.
M has coordinates $(((x_J - x_C) * x_K)/x_J + x_C, (x_K * y_J + (x_J - x_K) * y_C)/x_J)$.
N has coordinates $(((x_J - x_D) * x_K)/x_J + x_D, (x_K * y_J + (x_J - x_K) * y_D)/x_J)$.
O has coordinates $(((x_J - x_E) * x_K)/x_J + x_E, (x_K * y_J + (x_J - x_K) * y_E)/x_J)$.
P has coordinates $(((x_J - x_F) * x_K)/x_J + x_F, (x_K * y_J + (x_J - x_K) * y_F)/x_J)$.
Q has coordinates
$((x_K * (((3^{1/2}) * y_F)/2 + x_J - x_F/2))/x_J + (x_F - (3^{1/2}) * y_F)/2, (x_K * y_J + (x_J - x_K) * (y_F/2 + ((3^{1/2}) * x_F)/2))/x_J)$.
R has coordinates
$((x_J * ((3^{1/2}) * y_E - (3^{1/2}) * y_D + x_E + x_D) + x_K * (-(3^{1/2}) * y_E + (3^{1/2}) * y_D + 2 * x_J - x_E - x_D))/(2 * x_J), (2 * x_K * y_J + (x_J - x_K) * (y_E + y_D - (3^{1/2}) * (x_E - x_D)))/(2 * x_J))$.
S has coordinates
$((x_J * ((3^{1/2}) * y_C + x_C + 1) + x_K * (-(3^{1/2}) * y_C + 2 * x_J - x_C - 1))/(2 * x_J), (x_K * y_J + (x_J - x_K) * (y_C/2 - ((3^{1/2}) * (x_C - 1))/2))/x_J)$.
T has coordinates
$((1/2) * (((x_K * (((3^{1/2}) * y_F)/2 + x_J - x_F/2))/x_J + (x_F - (3^{1/2}) * y_F)/2) + ((x_J * ((3^{1/2}) * y_C + x_C + 1) + x_K * (-(3^{1/2}) * y_C + 2 * x_J - x_C - 1))/(2 * x_J))), (1/2) *$

$(((x_K * y_J + (x_J - x_K) * (y_F/2 + ((3^{1/2}) * x_F)/2))/x_J) + ((x_K * y_J + (x_J - x_K) * (y_C/2 - ((3^{1/2}) * (x_C - 1))/2))/x_J)))$.
U has coordinates
$((1/2) * (((x_K * (((3^{1/2}) * y_F)/2 + x_J - x_F/2))/x_J + (x_F - (3^{1/2}) * y_F)/2) + ((x_J * ((3^{1/2}) * y_E - (3^{1/2}) * y_D + x_E + x_D) + x_K * (-(3^{1/2}) * y_E + (3^{1/2}) * y_D + 2 * x_J - x_E - x_D))/(2 * x_J))), (1/2) * (((x_K * y_J + (x_J - x_K) * (y_F/2 + ((3^{1/2}) * x_F)/2))/x_J) + ((2 * x_K * y_J + (x_J - x_K) * (y_E + y_D - (3^{1/2}) * (x_E - x_D)))/(2 * x_J))))$.
V has coordinates
$((1/2) * (((x_J * ((3^{1/2}) * y_C + x_C + 1) + x_K * (-(3^{1/2}) * y_C + 2 * x_J - x_C - 1))/(2 * x_J)) + ((x_J * ((3^{1/2}) * y_E - (3^{1/2}) * y_D + x_E + x_D) + x_K * (-(3^{1/2}) * y_E + (3^{1/2}) * y_D + 2 * x_J - x_E - x_D))/(2 * x_J))), (1/2) * (((x_K * y_J + (x_J - x_K) * (y_C/2 - ((3^{1/2}) * (x_C - 1))/2))/x_J) + ((2 * x_K * y_J + (x_J - x_K) * (y_E + y_D - (3^{1/2}) * (x_E - x_D)))/(2 * x_J))))$.
W has coordinates
$(-(3^{1/2} * (x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_E + x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J)), -(4 * x_K * y_J - (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - (x_K - x_J) * y_C - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J)/(2 * (x_K - 3 * x_J)))$.
Z has coordinates
$((1/2) * (x_K + (((x_J - x_C) * x_K)/x_J + x_C)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_C)/x_J)))$.
A_1 has coordinates
$((1/2) * ((((x_J - x_C) * x_K)/x_J + x_C) + (((x_J - x_E) * x_K)/x_J + x_E)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_C)/x_J) + ((x_K * y_J + (x_J - x_K) * y_E)/x_J)))$.
B_1 has coordinates
$((1/2) * (x_K + (((x_J - x_E) * x_K)/x_J + x_E)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_E)/x_J)))$.
C_1 has coordinates
$(-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J), -(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J))$.
D_1 has coordinates
$((1/2) * ((((x_J - 1) * x_K)/x_J + 1) + (((x_J - x_F) * x_K)/x_J + x_F)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_F)/x_J)))$.
E_1 has coordinates
$((1/2) * ((((x_J - x_D) * x_K)/x_J + x_D) + (((x_J - x_F) * x_K)/x_J + x_F)), (1/2) * (((x_K * y_J + (x_J - x_K) * y_D)/x_J) + ((x_K * y_J + (x_J - x_K) * y_F)/x_J)))$.
F_1 has coordinates
$((1/2) * ((((x_J - 1) * x_K)/x_J + 1) + (((x_J - x_D) * x_K)/x_J + x_D)), (1/2) * ((x_K * y_J/x_J) + ((x_K * y_J + (x_J - x_K) * y_D)/x_J)))$.
G_1 has coordinates
$(-((2 * x_J - x_F - x_D - 1) * x_K + (x_F + x_D + 1) * x_J)/(x_K - 3 * x_J), -(2 * x_K * y_J + (x_J - x_K) * y_F + (x_J - x_K) * y_D)/(x_K - 3 * x_J))$.
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_W - x_{G_1})^2 - (y_W - y_{G_1})^2$
$= ((-(3^{1/2} * (x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_E + x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)))^2 + ((-(4 * x_K * y_J - (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - (x_K - x_J) * y_C - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J)))^2 - ((-(3^{1/2} *$

$(x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_E + x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-((2 * x_J - x_F - x_D - 1) * x_K + (x_F + x_D + 1) * x_J)/(x_K - 3 * x_J)))^2 - ((-(4 * x_K * y_J - (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - (x_K - x_J) * y_C - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-(2 * x_K * y_J + (x_J - x_K) * y_F + (x_J - x_K) * y_D)/(x_K - 3 * x_J)))^2 = 0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that
$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_{C_1} - x_{G_1})^2 - (y_{C_1} - y_{G_1})^2$
$= ((-(3^{1/2} * (x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_E + x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)))^2 + ((-(4 * x_K * y_J - (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - (x_K - x_J) * y_C - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J)))^2 - ((-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)) - (-((2 * x_J - x_F - x_D - 1) * x_K + (x_F + x_D + 1) * x_J)/(x_K - 3 * x_J)))^2 - ((-(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J)) - (-(2 * x_K * y_J + (x_J - x_K) * y_F + (x_J - x_K) * y_D)/(x_K - 3 * x_J)))^2 = 0$ as desired.

Case 2: the triangles are internal.
G has coordinates $(x_F/2 + (3^{1/2} * y_F)/2, y_F/2 - (3^{1/2} * x_F)/2)$.
H has coordinates
$(x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2, y_E/2 + y_D/2 + (3^{1/2} * (x_E - x_D))/2)$.
I has coordinates $(x_C/2 - (3^{1/2} * y_C)/2 + 1/2, y_C/2 + (3^{1/2} * (x_C - 1))/2)$.
J has coordinates (x_J, y_J).
K has coordinates $(x_K, x_K * y_J/x_J)$.
L has coordinates $(((x_J - 1) * x_K)/x_J + 1, x_K * y_J/x_J)$.
M has coordinates $(((x_J - x_C) * x_K)/x_J + x_C, (x_K * y_J + (x_J - x_K) * y_C)/x_J)$.
N has coordinates $(((x_J - x_D) * x_K)/x_J + x_D, (x_K * y_J + (x_J - x_K) * y_D)/x_J)$.
O has coordinates $(((x_J - x_E) * x_K)/x_J + x_E, (x_K * y_J + (x_J - x_K) * y_E)/x_J)$.
P has coordinates $(((x_J - x_F) * x_K)/x_J + x_F, (x_K * y_J + (x_J - x_K) * y_F)/x_J)$.
Q has coordinates
$(((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2), (x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J)$.
R has coordinates
$(((x_J - (x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)) * x_K)/x_J + x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2, (x_K * y_J + (x_J - x_K) * (y_E/2 + y_D/2 + (3^{1/2} * (x_E - x_D))/2))/x_J)$.
S has coordinates
$(((x_J - (x_C/2 - (3^{1/2} * y_C)/2 + 1/2)) * x_K)/x_J + x_C/2 - (3^{1/2} * y_C)/2 + 1/2, (x_K * y_J + (x_J - x_K) * (y_C/2 + (3^{1/2} * (x_C - 1))/2))/x_J)$.
T has coordinates
$((1/2) * ((((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2)) + (((x_J - (x_C/2 - (3^{1/2} * y_C)/2 + 1/2)) * x_K)/x_J + x_C/2 - (3^{1/2} * y_C)/2 + 1/2)), (1/2) * (((x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J) + ((x_K * y_J + (x_J - x_K) * (y_C/2 + (3^{1/2} * (x_C - 1))/2))/x_J)))$.
U has coordinates
$((1/2) * ((((x_J - (x_F/2 + (3^{1/2} * y_F)/2)) * x_K)/x_J + (x_F/2 + (3^{1/2} * y_F)/2)) + (((x_J - (x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)) * x_K)/x_J + x_E/2 + x_D/2 - (3^{1/2} * y_E)/2 + (3^{1/2} * y_D)/2)), (1/2) * (((x_K * y_J + (x_J - x_K) * (y_F/2 - (3^{1/2} * x_F)/2))/x_J) + ((x_K * y_J + (x_J - x_K) * (y_E/2 + y_D/2 + (3^{1/2} * (x_E - x_D))/2))/x_J)))$.

V has coordinates
$((1/2)*((((x_J-(x_C/2-(3^{1/2}*y_C)/2+1/2))*x_K)/x_J+x_C/2-(3^{1/2}*y_C)/2+1/2)+$
$(((x_J-(x_E/2+x_D/2-(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2))*x_K)/x_J+x_E/2+x_D/2-$
$(3^{1/2}*y_E)/2+(3^{1/2}*y_D)/2)), (1/2)*(((x_K*y_J+(x_J-x_K)*(y_C/2+(3^{1/2}*(x_C-$
$1))/2))/x_J)+((x_K*y_J+(x_J-x_K)*(y_E/2+y_D/2+(3^{1/2}*(x_E-x_D))/2))/x_J))).$
W has coordinates
$((3^{1/2}*(x_K-x_J)*y_F-3^{1/2}*(x_K-x_J)*y_E+3^{1/2}*(x_K-x_J)*y_D-3^{1/2}*(x_K-x_J)*$
$y_C-(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_E+x_D+x_C+1)*x_J)/(2*(x_K-3*$
$x_J)), -(4*x_K*y_J-(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-(x_K-x_J)*y_C+$
$3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_K-3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_J)/(2*(x_K-3*x_J))).$
Z has coordinates
$((1/2)*(x_K+(((x_J-x_C)*x_K)/x_J+x_C)), (1/2)*(x_K*y_J/x_J+((x_K*y_J+(x_J-$
$x_K)*y_C)/x_J))).$
A_1 has coordinates
$((1/2)*((((x_J-x_C)*x_K)/x_J+x_C)+(((x_J-x_E)*x_K)/x_J+x_E)), (1/2)*(((x_K*$
$y_J+(x_J-x_K)*y_C)/x_J)+((x_K*y_J+(x_J-x_K)*y_E)/x_J))).$
B_1 has coordinates
$((1/2)*(x_K+(((x_J-x_E)*x_K)/x_J+x_E)), (1/2)*(x_K*y_J/x_J+((x_K*y_J+(x_J-$
$x_K)*y_E)/x_J))).$
C_1 has coordinates
$(-((2*x_J-x_E-x_C)*x_K+(x_E+x_C)*x_J)/(x_K-3*x_J), -(2*x_K*y_J+(x_J-$
$x_K)*y_E+(x_J-x_K)*y_C)/(x_K-3*x_J)).$
D_1 has coordinates
$((1/2)*((((x_J-1)*x_K)/x_J+1)+(((x_J-x_F)*x_K)/x_J+x_F)), (1/2)*((x_K*$
$y_J/x_J)+((x_K*y_J+(x_J-x_K)*y_F)/x_J))).$
E_1 has coordinates
$((1/2)*((((x_J-x_D)*x_K)/x_J+x_D)+(((x_J-x_F)*x_K)/x_J+x_F)), (1/2)*(((x_K*$
$y_J+(x_J-x_K)*y_D)/x_J)+((x_K*y_J+(x_J-x_K)*y_F)/x_J))).$
F_1 has coordinates
$((1/2)*((((x_J-1)*x_K)/x_J+1)+(((x_J-x_D)*x_K)/x_J+x_D)), (1/2)*((x_K*$
$y_J/x_J)+((x_K*y_J+(x_J-x_K)*y_D)/x_J))).$
G_1 has coordinates
$(-((2*x_J-x_F-x_D-1)*x_K+(x_F+x_D+1)*x_J)/(x_K-3*x_J), -(2*x_K*$
$y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_D)/(x_K-3*x_J)).$
We verify that WC_1 and WG_1 are of the same length since we calculate that
$(x_W-x_{C_1})^2+(y_W-y_{C_1})^2-(x_W-x_{G_1})^2-(y_W-y_{G_1})^2$
$=(((3^{1/2}*(x_K-x_J)*y_F-3^{1/2}*(x_K-x_J)*y_E+3^{1/2}*(x_K-x_J)*y_D-3^{1/2}*(x_K-$
$x_J)*y_C-(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_E+x_D+x_C+1)*x_J)/(2*$
$(x_K-3*x_J)))-(-((2*x_J-x_E-x_C)*x_K+(x_E+x_C)*x_J)/(x_K-3*x_J)))^2+$
$((-(4*x_K*y_J-(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-(x_K-x_J)*y_C+$
$3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_K-3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_J)/(2*(x_K-3*$
$x_J)))-(-(2*x_K*y_J+(x_J-x_K)*y_E+(x_J-x_K)*y_C)/(x_K-3*x_J)))^2-(((3^{1/2}*$
$(x_K-x_J)*y_F-3^{1/2}*(x_K-x_J)*y_E+3^{1/2}*(x_K-x_J)*y_D-3^{1/2}*(x_K-x_J)*y_C-$
$(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_E+x_D+x_C+1)*x_J)/(2*(x_K-$
$3*x_J)))-(-((2*x_J-x_F-x_D-1)*x_K+(x_F+x_D+1)*x_J)/(x_K-3*x_J)))^2-$
$((-(4*x_K*y_J-(x_K-x_J)*y_F-(x_K-x_J)*y_E-(x_K-x_J)*y_D-(x_K-x_J)*y_C+$
$3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_K-3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_J)/(2*(x_K-$
$3*x_J)))-(-(2*x_K*y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_D)/(x_K-3*x_J)))^2=0$
and we verify that WC_1 and C_1G_1 are of the same length since we calculate that

$(x_W - x_{C_1})^2 + (y_W - y_{C_1})^2 - (x_{C_1} - x_{G_1})^2 - (y_{C_1} - y_{G_1})^2$
$= (((3^{1/2} * (x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - 3^{1/2} * (x_K - x_J) * y_C - (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K - (x_F + x_E + x_D + x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)))^2 + ((-(4 * x_K * y_J - (x_K - x_J) * y_F - (x_K - x_J) * y_E - (x_K - x_J) * y_D - (x_K - x_J) * y_C + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J)/(2 * (x_K - 3 * x_J))) - (-(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J)))^2 - ((-((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)) - (-((2 * x_J - x_F - x_D - 1) * x_K + (x_F + x_D + 1) * x_J)/(x_K - 3 * x_J)))^2 - ((-(2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J)) - (-(2 * x_K * y_J + (x_J - x_K) * y_F + (x_J - x_K) * y_D)/(x_K - 3 * x_J)))^2 = 0$
as desired. □

Theorem 2.4. *The resulting triangles in theorems 2.1 and 2.2 are in perspective.*

Proof. Case 1: the mounted triangles are external.
The line between the W coordinates in theorems 2.1 and 2.2 is given by the equation
$y = (2 * (x_K - 3 * x_J) * (y_F + y_C) * x - 4 * (x_F + x_C - 1) * x_K * y_J - (3^{1/2} * x_K * y_E - 3^{1/2} * x_J * y_E - 3^{1/2} * x_K * y_D + 3^{1/2} * x_J * y_D - 4 * x_J * x_K + x_E * x_K + x_D * x_K + 2 * x_K - (x_E + x_D + 2) * x_J) * y_F - (x_K - x_J) * (3^{1/2} * y_C - x_F - x_C + 1) * y_E + (x_K - x_J) * (3^{1/2} * y_C + x_F + x_C - 1) * y_D + ((4 * x_J - x_E - x_D - 2) * x_K + (x_E + x_D + 2) * x_J) * y_C - 3^{1/2} * (x_E - x_D) * (x_F + x_C - 1) * x_K + 3^{1/2} * (x_E - x_D) * (x_F + x_C - 1) * x_J)/(2 * (x_F + x_C - 1) * (x_K - 3 * x_J))$.
The line between G_1 in theorem 2.1 and C_1 in theorem 2.2 is given by the equation
$y = (2 * (x_K - 3 * x_J) * (y_E - y_D - y_C) * x - 4 * (x_E - x_D - x_C + 1) * x_K * y_J + (x_K - x_J) * (3^{1/2} * (y_E - y_D - y_C) + x_E - x_D - x_C + 1) * y_F + ((4 * x_J - x_F - 2 * (x_D + x_C)) * x_K + (x_F + 2 * (x_D + x_C)) * x_J) * y_E - ((4 * x_J - x_F - 2 * x_E - 2) * x_K + (x_F + 2 * x_E + 2) * x_J) * y_D - ((4 * x_J - x_F - 2 * x_E - 2) * x_K + (x_F + 2 * x_E + 2) * x_J) * y_C + 3^{1/2} * (x_E - x_D - x_C + 1) * x_F * x_K - 3^{1/2} * (x_E - x_D - x_C + 1) * x_F * x_J)/(2 * (x_E - x_D - x_C + 1) * (x_K - 3 * x_J))$.
The line between C_1 in theorem 2.1 and G_1 in theorem 2.2 is given by the equation
$y = ((2 * (x_K - x_J) * y_F + 2 * (x_K - x_J) * y_E - 2 * (x_K - x_J) * y_D) * (2 * (x_K - 3 * x_J) * x - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - 2 * (x_F + x_E) - x_C - 1) * x_K - (-2 * (x_F + x_E) - x_C - 1) * x_J))/(2 * (x_K - 3 * x_J) * (-(4 * x_J - 2 * (x_F + x_E) - x_C - 1) * x_K + (4 * x_J - 2 * x_D - x_C - 1) * x_K + (-2 * (x_F + x_E) - x_C - 1) * x_J - (-2 * x_D - x_C - 1) * x_J)) + (-4 * x_K * y_J + 2 * (x_K - x_J) * y_F + 2 * (x_K - x_J) * y_E - (x_J - x_K) * y_C - 3^{1/2} * (x_C - 1) * x_K + 3^{1/2} * (x_C - 1) * x_J)/(2 * (x_K - 3 * x_J))$.
Consider the point whose coordinates are given by
$(((3^{1/2} * (x_F + x_E - x_D) * (x_K - x_J) * y_E - 3^{1/2} * (x_F + x_E - x_D) * (x_K - x_J) * y_D - 3^{1/2} * (x_F + x_C - 1) * (x_K - x_J) * y_C - (x_E - x_D - x_C + 1) * (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K - (x_E - x_D - x_C + 1) * (x_F + x_E + x_D + x_C + 1) * x_J) * y_F + (3^{1/2} * (x_E - x_D - x_C + 1) * (x_K - x_J) * y_C + (x_F + x_C - 1) * (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_C - 1) * (x_F + x_E + x_D + x_C + 1) * x_J) * y_E - (3^{1/2} * x_E * x_K * y_C - 3^{1/2} * x_D * x_K * y_C - 3^{1/2} * x_C * x_K * y_C + 3^{1/2} * x_K * y_C - 3^{1/2} * x_E * x_J * y_C + 3^{1/2} * x_D * x_J * y_C + 3^{1/2} * x_C * x_J * y_C - 3^{1/2} * x_J * y_C + 4 * x_F * x_J * x_K + 4 * x_C * x_J * x_K - 4 * x_J * x_K - x_F^2 * x_K - x_E * x_F * x_K - x_D * x_F * x_K - 2 * x_C * x_F * x_K - x_C * x_E * x_K + x_E * x_K - x_C * x_D * x_K + x_D * x_K - x_C^2 * x_K + x_K + (x_F + x_C - 1) * (x_F + x_E + x_D + x_C + 1) * x_J) * y_D - (x_F + x_E - x_D) * ((4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (x_F + x_E + x_D + x_C + 1) * x_J) * y_C + 3^{1/2} * (x_E - x_D - x_C + 1) * (x_F + x_C - 1) * (x_F + x_E - x_D) * x_K - 3^{1/2} * (x_E - x_D - x_C + 1) * (x_F + x_C - 1) * (x_F + x_E - x_D) * x_J)/(2 * (x_K - 3 * x_J) * ((x_E - x_D - x_C + 1) * y_F - (x_F + x_C - 1) * y_E + (x_F + x_C - 1) * y_D + (x_F + x_E - x_D) * y_C)), -(4 * x_K * ((x_E - x_D - x_C + 1) * y_F - (x_F + x_C - 1) * y_E + (x_F + x_C - 1) * y_D + (x_F + x_E - x_D) * y_C) * y_J - (x_K - x_J) * (3^{1/2} * (y_E - y_D - y_C) +$

$x_E-x_D-x_C+1)*y_F^2-(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)-x_F+x_E-x_D-2*x_C+2)+3^{1/2}*y_D^2+x_F*y_D+x_E*y_D-x_D*y_D-3^{1/2}*y_C^2+x_F*y_C+2*x_E*y_C-2*x_D*y_C-x_C*y_C+y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F-(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_E^2+(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)-x_E+x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E-(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_D^2-(x_K-x_J)*(y_C*(3^{1/2}*y_C+2*x_F+x_E-x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2+3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))$.
We verify that this point lies on all three lines since we calculate
$(2*(x_K-3*x_J)*(y_F+y_C)*(((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C-(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C+(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C+4*x_F*x_J*x_K+4*x_C*x_J*x_K-4*x_J*x_K-x_F^2*x_K-x_E*x_F*x_K-x_D*x_F*x_K-2*x_C*x_F*x_K-x_C*x_E*x_K+x_E*x_K-x_C*x_D*x_K+x_D*x_K-x_C^2*x_K+x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D-(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))-4*(x_F+x_C-1)*x_K*y_J-(3^{1/2}*x_K*y_E-3^{1/2}*x_J*y_E-3^{1/2}*x_K*y_D+3^{1/2}*x_J*y_D-4*x_J*x_K+x_E*x_K+x_D*x_K+2*x_K-(x_E+x_D+2)*x_J)*y_F-(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_E+(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_D+((4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J)*y_C-3^{1/2}*(x_E-x_D)*(x_F+x_C-1)*x_K+3^{1/2}*(x_E-x_D)*(x_F+x_C-1)*x_J)/(2*(x_F+x_C-1)*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J-(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)+x_E-x_D-x_C+1)*y_F^2-(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)-x_F+x_E-x_D-2*x_C+2)+3^{1/2}*y_D^2+x_F*y_D+x_E*y_D-x_D*y_D-3^{1/2}*y_C^2+x_F*y_C+2*x_E*y_C-2*x_D*y_C-x_C*y_C+y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F-(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_E^2+(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)-x_E+x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E-(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_D^2-(x_K-x_J)*(y_C*(3^{1/2}*y_C+2*x_F+x_E-x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2+3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))=0$,
$(2*(x_K-3*x_J)*(y_E-y_D-y_C)*(((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C-(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C+(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C+4*x_F*x_J*x_K+4*x_C*x_J*x_K-4*x_J*x_K-x_F^2*x_K-x_E*x_F*x_K-x_D*x_F*x_K-2*x_C*x_F*x_K-x_C*x_E*x_K+x_E*x_K-x_C*x_D*x_K+x_D*x_K-x_C^2*x_K+x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D-(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))-4*(x_E-x_D-x_C+1)*x_K*y_J+(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)+x_E-x_D-x_C+1)*y_F+((4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*$

$x_J)*y_E-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_D-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_K-3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_J)/(2*(x_E-x_D-x_C+1)*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J-(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)+x_E-x_D-x_C+1)*y_F^2-(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)-x_F+x_E-x_D-2*x_C+2)+3^{1/2}*y_D^2+x_F*y_D+x_E*y_D-x_D*y_D-3^{1/2}*y_C^2+x_F*y_C+2*x_E*y_C-2*x_D*y_C-x_C*y_C+y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F-(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_E^2+(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)-x_E+x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E-(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_D^2-(x_K-x_J)*(y_C*(3^{1/2}*y_C+2*x_F+x_E-x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2+3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C))) = 0$
and
$((2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-2*(x_K-x_J)*y_D)*(2*(x_K-3*x_J)*(((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C-(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C+(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C+4*x_F*x_J*x_K+4*x_C*x_J*x_K-4*x_J*x_K-x_F^2*x_K-x_E*x_F*x_K-x_D*x_F*x_K-2*x_C*x_F*x_K-x_C*x_E*x_K+x_E*x_K-x_C*x_D*x_K+x_D*x_K-x_C^2*x_K+x_K+(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D-(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))-3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K-(-2*(x_F+x_E)-x_C-1)*x_J))/(2*(x_K-3*x_J)*(-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(4*x_J-2*x_D-x_C-1)*x_K+(-2*(x_F+x_E)-x_C-1)*x_J-(-2*x_D-x_C-1)*x_J))+(-4*x_K*y_J+2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-(x_J-x_K)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J-(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)+x_E-x_D-x_C+1)*y_F^2-(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)-x_F+x_E-x_D-2*x_C+2)+3^{1/2}*y_D^2+x_F*y_D+x_E*y_D-x_D*y_D-3^{1/2}*y_C^2+x_F*y_C+2*x_E*y_C-2*x_D*y_C-x_C*y_C+y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F-(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_E^2+(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)-x_E+x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E-(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_D^2-(x_K-x_J)*(y_C*(3^{1/2}*y_C+2*x_F+x_E-x_D+x_C-1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2+3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C))) = 0$
as desired.

Case 2: the mounted triangles are internal.
The line between the W coordinates in theorems 2.1 and 2.2 is given by the equation
$y = ((-2*(x_K-x_J)*y_F+(x_K-x_J)*y_E+(x_J-x_K)*y_E-2*(x_K-x_J)*y_C)*(2*(x_K-3*x_J)*x+3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J))/(2*(x_K-3*x_J)*((4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(4*x_J-x_E-x_D-2)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J-(x_E+x_D+2)*x_J))+(-4*x_K*y_J+(x_K-$

$x_J)*y_E-(x_J-x_K)*y_D+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J))$.
The line between G_1 in theorem 2.1 and C_1 in theorem 2.2 is given by the equation
$y = (2*(x_K-3*x_J)*(y_E-y_D-y_C)*x-4*(x_E-x_D-x_C+1)*x_K*y_J-(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F+((4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)*y_E-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_D-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_C-3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_K+3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_J)/(2*(x_E-x_D-x_C+1)*(x_K-3*x_J))$.
The line between C_1 in theorem 2.1 and G_1 in theorem 2.2 is given by the equation
$y = ((2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-2*(x_K-x_J)*y_D)*(2*(x_K-3*x_J)*x+3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J))/(2*(x_K-3*x_J)*(-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(4*x_J-2*x_D-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J+(2*x_D+x_C+1)*x_J))+(-4*x_K*y_J+2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-(x_J-x_K)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))$.
Consider the point whose coordinates are given by
$(-((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C+(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C-(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C-4*x_F*x_J*x_K-4*x_C*x_J*x_K+4*x_J*x_K+x_F^2*x_K+x_E*x_F*x_K+x_D*x_F*x_K+2*x_C*x_F*x_K+x_C*x_E*x_K-x_E*x_K+x_C*x_D*x_K-x_D*x_K+x_C^2*x_K-x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D+(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C))$, $-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J+(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F^2+(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)+x_F-x_E+x_D+2*x_C-2)+3^{1/2}*y_D^2-x_F*y_D-x_E*y_D+x_D*y_D-3^{1/2}*y_C^2-x_F*y_C-2*x_E*y_C+2*x_D*y_C+x_C*y_C-y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F+(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_E^2-(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)+x_E-x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E+(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_D^2+(x_K-x_J)*(y_C*(3^{1/2}*y_C-2*x_F-x_E+x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2-3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))$.
We verify that this point lies on all three lines since we calculate that
$((-2*(x_K-x_J)*y_F+(x_K-x_J)*y_E+(x_J-x_K)*y_E-2*(x_K-x_J)*y_C)*(2*(x_K-3*x_J)*(-((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C+(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C-(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C-4*x_F*x_J*x_K-4*x_C*x_J*x_K+4*x_J*x_K+x_F^2*x_K+x_E*x_F*x_K+x_D*x_F*x_K+2*x_C*x_F*x_K+x_C*x_E*x_K-x_E*x_K+x_C*x_D*x_K-x_D*x_K+x_C^2*x_K-x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D+(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+$

$$1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))+3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J))/(2*(x_K-3*x_J)*((4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(4*x_J-x_E-x_D-2)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J-(x_E+x_D+2)*x_J))+(-4*x_K*y_J+(x_K-x_J)*y_E-(x_J-x_K)*y_D+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J+(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F^2+(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)+x_F-x_E+x_D+2*x_C-2)+3^{1/2}*y_D^2-x_F*y_D-x_E*y_D+x_D*y_D-3^{1/2}*y_C^2-x_F*y_C-2*x_E*y_C+2*x_D*y_C+x_C*y_C-y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F+(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_E^2-(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)+x_E-x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E+(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_D^2+(x_K-x_J)*(y_C*(3^{1/2}*y_C-2*x_F-x_E+x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2-3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))=0,$$

$$(2*(x_K-3*x_J)*(y_E-y_D-y_C)*(-((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C+(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C-(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C-4*x_F*x_J*x_K-4*x_C*x_J*x_K+4*x_J*x_K+x_F^2*x_K+x_E*x_F*x_K+x_D*x_F*x_K+2*x_C*x_F*x_K+x_C*x_E*x_K-x_E*x_K+x_C*x_D*x_K-x_D*x_K+x_C^2*x_K-x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D+(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))-4*(x_E-x_D-x_C+1)*x_K*y_J-(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F+((4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)*y_E-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_D-((4*x_J-x_F-2*x_E-2)*x_K+(x_F+2*x_E+2)*x_J)*y_C-3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_K+3^{1/2}*(x_E-x_D-x_C+1)*x_F*x_J)/(2*(x_E-x_D-x_C+1)*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J+(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F^2+(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)+x_F-x_E+x_D+2*x_C-2)+3^{1/2}*y_D^2-x_F*y_D-x_E*y_D+x_D*y_D-3^{1/2}*y_C^2-x_F*y_C-2*x_E*y_C+2*x_D*y_C+x_C*y_C-y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F+(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_E^2-(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)+x_E-x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E+(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_D^2+(x_K-x_J)*(y_C*(3^{1/2}*y_C-2*x_F-x_E+x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2-3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))=0$$

and

$$((2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-2*(x_K-x_J)*y_D)*(2*(x_K-3*x_J)*(-((3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_E-3^{1/2}*(x_F+x_E-x_D)*(x_K-x_J)*y_D-3^{1/2}*(x_F+x_C-1)*(x_K-x_J)*y_C+(x_E-x_D-x_C+1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_E-x_D-x_C+1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_F+(3^{1/2}*(x_E-x_D-x_C+1)*(x_K-x_J)*y_C-(x_F+x_C-1)*(4*x_J-x_F-x_E-x_D-x_C-1)*x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_E-(3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_D*x_K*y_C-3^{1/2}*x_C*x_K*y_C+3^{1/2}*x_K*y_C-$$

$3^{1/2}*x_E*x_J*y_C+3^{1/2}*x_D*x_J*y_C+3^{1/2}*x_C*x_J*y_C-3^{1/2}*x_J*y_C-4*x_F*x_J*x_K-4*x_C*x_J*x_K+4*x_J*x_K+x_F^2*x_K+x_E*x_F*x_K+x_D*x_F*x_K+2*x_C*x_F*x_K+x_C*x_E*x_K-x_E*x_K+x_C*x_D*x_K-x_D*x_K+x_C^2*x_K-x_K-(x_F+x_C-1)*(x_F+x_E+x_D+x_C+1)*x_J)*y_D+(x_F+x_E-x_D)*((4*x_J-x_F-x_E-x_D-x_C-1)*x_K+(x_F+x_E+x_D+x_C+1)*x_J)*y_C+3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_K-3^{1/2}*(x_E-x_D-x_C+1)*(x_F+x_C-1)*(x_F+x_E-x_D)*x_J)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)))+3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J))/(2*(x_K-3*x_J)*(-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(4*x_J-2*x_D-x_C-1)*x_K-(2*(x_F+x_E)+x_C+1)*x_J+(2*x_D+x_C+1)*x_J))+(-4*x_K*y_J+2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-(x_J-x_K)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))-(-(4*x_K*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C)*y_J+(x_K-x_J)*(3^{1/2}*(y_E-y_D-y_C)-x_E+x_D+x_C-1)*y_F^2+(x_K-x_J)*(y_E*(3^{1/2}*(y_E-2*y_D)+x_F-x_E+x_D+2*x_C-2)+3^{1/2}*y_D^2-x_F*y_D-x_E*y_D+x_D*y_D-3^{1/2}*y_C^2-x_F*y_C-2*x_E*y_C+2*x_D*y_C+x_C*y_C-y_C+3^{1/2}*(x_E-x_D-x_C+1)*x_F)*y_F+(x_K-x_J)*(3^{1/2}*y_C+x_F+x_C-1)*y_E^2-(x_K-x_J)*(y_C*(3^{1/2}*(2*y_D+y_C)+x_E-x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_E+(x_K-x_J)*(3^{1/2}*y_C-x_F-x_C+1)*y_D^2+(x_K-x_J)*(y_C*(3^{1/2}*y_C-2*x_F-x_E+x_D-x_C+1)-3^{1/2}*(x_E-x_D)*(x_F+x_C-1))*y_D-(x_F+x_E-x_D)*(x_K-x_J)*y_C^2-3^{1/2}*(x_C-1)*(x_F+x_E-x_D)*(x_K-x_J)*y_C)/(2*(x_K-3*x_J)*((x_E-x_D-x_C+1)*y_F-(x_F+x_C-1)*y_E+(x_F+x_C-1)*y_D+(x_F+x_E-x_D)*y_C))) =$
0 as desired. □

Theorem 2.5. *The resulting triangles in theorems 2.1 and 2.3 are in perspective.*

Proof. Case 1: the mounted triangles are external.
The line between the W coordinates in theorems 2.1 and 2.3 is given by the equation
$y = -(((x_K - 3*x_J)*y_F + (x_K - 3*x_J)*y_C + 3^{1/2}*(x_F - x_C + 1)*x_K - 3^{3/2}*(x_F - x_C + 1)*x_J)*x + 2*x_K*(3^{1/2}*(y_F - y_C) - x_F - x_C + 1)*y_J + (-3^{1/2}*x_K*y_E + 3^{1/2}*x_J*y_E + 2*x_J*x_K + x_E*x_K - 2*x_D*x_K - x_K - (x_E - 2*x_D - 1)*x_J)*y_F + (-x_F + 2*x_C - 2)*(x_K - x_J)*y_E + (x_K - x_J)*(3^{1/2}*y_C + 2*x_F - x_C + 1)*y_D + ((2*x_J - 2*x_E + x_D - 1)*x_K + (2*x_E - x_D + 1)*x_J)*y_C + 3^{1/2}*(2*(x_F - x_C + 1)*x_J - (x_E + 1)*x_F + (x_C - 1)*x_D + x_C - 1)*x_K + 3^{1/2}*((x_E + 1)*x_F - (x_C - 1)*x_D - x_C + 1)*x_J)/((x_K - 3*x_J)*(3^{1/2}*(y_F - y_C) - x_F - x_C + 1))$.
The line between C_1 in theorem 2.1 and G_1 in theorem 2.3 is given by the equation
$y = (((2*x_K*y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_D)/(x_K-3*x_J)-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E+(x_J-x_K)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))*(x-(3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(-2*(x_F+x_E)-x_C-1)*x_J)/(2*(x_K-3*x_J))))/((3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(-2*(x_F+x_E)-x_C-1)*x_J)/(2*(x_K-3*x_J)))+((2*x_J-x_F-x_D-1)*x_K+(x_F+x_D+1)*x_J)/(x_K-3*x_J))+(-4*x_K*y_J+2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E+(x_K-x_J)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J))$.
The line between G_1 in theorem 2.1 and C_1 in theorem 2.3 is given by the equation
$y = (((2*x_K*y_J+(x_J-x_K)*y_E+(x_J-x_K)*y_C)/(x_K-3*x_J)-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J)))*(x+(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))/(((2*x_J-x_E-x_C)*x_K+(x_E+x_C)*x_J)/(x_K-3*x_J)-(3^{1/2}*(x_K-x_J)*y_F+(4*x_J-x_F-2*(x_D+x_C))*x_K+(x_F+2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J)))+(-4*x_K*y_J+(x_K-x_J)*y_F+2*(x_K-x_J)*y_D+2*(x_K-x_J)*y_C+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J))$.

One can then verify that the following point lies on all three lines, whose coordinates are given by

$$((6*x_D*x_K-6*x_D*x_J+6*x_E*x_J-6*x_E*x_K-3*x_F*x_J+3*x_F*x_K-6*x_D^2*x_J+6*x_D^2*x_K-6*x_F^2*x_J-3*x_F^3*x_J+6*x_F^2*x_K+3*x_F^3*x_K+6*x_J*y_F^2-6*x_K*y_F^2+3^{1/2}*x_J*y_F^3-3^{1/2}*x_K*y_F^3+12*x_C*x_D^2*x_J-6*x_C^2*x_D*x_J-12*x_C*x_D^2*x_K+6*x_C^2*x_D*x_K+6*x_C^2*x_E*x_J+6*x_C*x_F^2*x_J-6*x_C^2*x_E*x_K+3*x_C^2*x_F*x_J+3*x_C*x_F^3*x_J-3*x_C^3*x_F*x_J-6*x_C*x_F^2*x_K-9*x_D*x_F^2*x_J-3*x_C^2*x_F*x_K-6*x_D^2*x_F*x_J-3*x_C*x_F^3*x_K+3*x_C^3*x_F*x_K+9*x_D*x_F^2*x_K+3*x_E*x_F^2*x_J+6*x_D^2*x_F*x_K+6*x_E^2*x_F*x_J-3*x_E*x_F^2*x_K-6*x_E^2*x_F*x_K-12*x_F^2*x_J*x_K-6*x_D*x_J*y_C^2+6*x_D*x_K*y_C^2+6*x_E*x_J*y_C^2-10*x_C*x_J*y_F^2-6*x_E*x_K*y_C^2-3*x_F*x_J*y_C^2+10*x_C*x_K*y_F^2+7*x_D*x_J*y_F^2+3*x_F*x_K*y_C^2-7*x_D*x_K*y_F^2-5*x_E*x_J*y_F^2+5*x_E*x_K*y_F^2+5*x_F*x_J*y_F^2-5*x_F*x_K*y_F^2+4*x_J*x_K*y_F^2-3*x_J*y_C*y_F^3+3*x_J*y_C^3*y_F+3*x_K*y_C*y_F^3-3*x_K*y_C^3*y_F-6*x_C^2*x_D^2*x_J+6*x_C^2*x_D^2*x_K+6*x_E^2*x_F^2*x_J-6*x_E^2*x_F^2*x_K+2*x_D^2*x_J*y_C^2-2*x_D^2*x_K*y_C^2+4*x_E^2*x_J*y_C^2+4*x_C^2*x_J*y_F^2-4*x_E^2*x_K*y_C^2-4*x_F^2*x_J*y_C^2-4*x_C^2*x_K*y_F^2-4*x_D^2*x_J*y_F^2+4*x_F^2*x_K*y_C^2+4*x_D^2*x_K*y_F^2-2*x_E^2*x_J*y_F^2+2*x_E^2*x_K*y_F^2+3*3^{1/2}*x_J*y_F-3*3^{1/2}*x_K*y_F+12*x_C*x_D*x_J-12*x_C*x_D*x_K-12*x_C*x_E*x_J+12*x_C*x_E*x_K+3*x_C*x_F*x_J+6*x_D*x_E*x_J-3*x_C*x_F*x_K-6*x_D*x_E*x_K-15*x_D*x_F*x_J+15*x_D*x_F*x_K+9*x_E*x_F*x_J-9*x_E*x_F*x_K-12*x_D*x_J*x_K+12*x_E*x_J*x_K-12*x_F*x_J*x_K+3*x_J*y_C*y_F-3*x_J*y_D*y_F-3*x_K*y_C*y_F+3*x_J*y_E*y_F+3*x_K*y_D*y_F-3*x_K*y_E*y_F-2*3^{1/2}*x_C*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C+2*3^{1/2}*x_C*x_J*y_E+2*3^{1/2}*x_C*x_K*y_D+2*3^{1/2}*x_D*x_J*y_D+2*3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C-7*3^{1/2}*x_C*x_J*y_F-2*3^{1/2}*x_C*x_K*y_E-2*3^{1/2}*x_D*x_J*y_E-2*3^{1/2}*x_D*x_K*y_D-4*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_F*x_J*y_C+7*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F+2*3^{1/2}*x_D*x_K*y_E+4*3^{1/2}*x_E*x_J*y_E+4*3^{1/2}*x_E*x_K*y_D+3^{1/2}*x_F*x_J*y_D+3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3*3^{1/2}*x_E*x_J*y_F-4*3^{1/2}*x_E*x_K*y_E-3^{1/2}*x_F*x_J*y_E-3^{1/2}*x_F*x_K*y_D-3*3^{1/2}*x_E*x_K*y_F+4*3^{1/2}*x_F*x_J*y_F+3^{1/2}*x_F*x_K*y_E-4*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_J*x_K*y_D+4*3^{1/2}*x_J*x_K*y_E+4*3^{1/2}*x_J*x_K*y_F-12*x_C*x_D*x_E*x_J+12*x_C*x_D*x_E*x_K+18*x_C*x_D*x_F*x_J-18*x_C*x_D*x_F*x_K-6*x_C*x_E*x_F*x_J+6*x_C*x_E*x_F*x_K+24*x_C*x_D*x_J*x_K-24*x_C*x_E*x_J*x_K+24*x_C*x_F*x_J*x_K-24*x_D*x_F*x_J*x_K+24*x_E*x_F*x_J*x_K+4*x_C*x_J*y_C*y_D-4*x_C*x_J*y_C*y_E-4*x_C*x_K*y_C*y_D+8*x_D*x_J*y_C*y_D+2*x_C*x_J*y_C*y_F+4*x_C*x_K*y_C*y_E-8*x_D*x_J*y_C*y_E-8*x_D*x_K*y_C*y_D-4*x_E*x_J*y_C*y_D-2*x_C*x_J*y_D*y_F-2*x_C*x_K*y_C*y_F+4*x_D*x_J*y_C*y_F+8*x_D*x_K*y_C*y_E+4*x_E*x_J*y_C*y_E+4*x_E*x_K*y_C*y_D+4*x_F*x_J*y_C*y_D+2*x_C*x_J*y_E*y_F+2*x_C*x_K*y_D*y_F+2*x_D*x_J*y_D*y_F-4*x_D*x_K*y_C*y_F+4*x_E*x_J*y_C*y_F-4*x_E*x_K*y_C*y_E-4*x_F*x_J*y_C*y_E-4*x_F*x_K*y_C*y_D-2*x_C*x_K*y_E*y_F-2*x_D*x_J*y_E*y_F-2*x_D*x_K*y_D*y_F-10*x_E*x_J*y_D*y_F-4*x_E*x_K*y_C*y_F+8*x_F*x_J*y_C*y_F+4*x_F*x_K*y_C*y_E+2*x_D*x_K*y_E*y_F+10*x_E*x_J*y_E*y_F+10*x_E*x_K*y_D*y_F-8*x_F*x_J*y_D*y_F-8*x_F*x_K*y_C*y_F-10*x_E*x_K*y_E*y_F+8*x_F*x_J*y_E*y_F+8*x_F*x_K*y_D*y_F-8*x_F*x_K*y_E*y_F+8*x_J*x_K*y_C*y_D-8*x_J*x_K*y_C*y_E+16*x_J*x_K*y_C*y_F-16*x_J*x_K*y_D*y_F+16*x_J*x_K*y_E*y_F+4*3^{1/2}*x_C^2*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C^3-2*3^{1/2}*x_C^3*x_J*y_D-4*3^{1/2}*x_C^2*x_J*y_E-4*3^{1/2}*x_C^2*x_K*y_D+4*3^{1/2}*x_E^2*x_J*y_C+2*3^{1/2}*x_D*x_K*y_C^3+2*3^{1/2}*x_E*x_J*y_C^3+2*3^{1/2}*x_C^3*x_J*y_E+2*3^{1/2}*x_C^3*x_K*y_D+5*3^{1/2}*x_C^2*x_J*y_F+4*3^{1/2}*x_C^2*x_K*y_E-4*3^{1/2}*x_E^2*x_K*y_C-2*3^{1/2}*x_F^2*x_J*y_C-3^{1/2}*x_C*x_J*y_F^3-2*3^{1/2}*x_E*x_K*y_C^3-3^{1/2}*x_F*x_J*y_C^3-3^{1/2}*x_C^3*x_J*y_F-2*3^{1/2}*x_C^3*x_K*y_E-3^{1/2}*x_F^3*x_J*y_C-5*3^{1/2}*x_C^2*x_K*y_F-6*3^{1/2}*x_D^2*x_J*y_F+3*3^{1/2}*x_F^2*x_J*y_D+2*3^{1/2}*x_F^2*x_K*y_C+3^{1/2}*x_C*x_K*y_F^3+2*3^{1/2}*x_D*x_J*y_F^3+3^{1/2}*x_F*x_K*y_C^3+3^{1/2}*x_C^3*x_K*y_F+2*3^{1/2}*x_F^3*x_J*y_D+3^{1/2}*x_F^3*x_K*y_C+6*3^{1/2}*x_D^2*x_K*y_F-2*3^{1/2}*x_E^2*x_J*y_F-3*3^{1/2}*x_F^2*x_J*y_E-3*3^{1/2}*x_F^2*x_K*y_D-2*3^{1/2}*x_D*x_K*y_F^3-2*3^{1/2}*x_E*x_J*y_F^3-2*3^{1/2}*x_F^3*x_J*y_E-2*$$

$3^{1/2}*x_F^3*x_K*y_D+2*3^{1/2}*x_E^2*x_K*y_F+3^{1/2}*x_F^2*x_J*y_F+3*3^{1/2}*x_F^2*x_K*y_E+2*3^{1/2}*x_E*x_K*y_F^3+2*3^{1/2}*x_F^3*x_K*y_E-3^{1/2}*x_F^2*x_K*y_F-2*3^{1/2}*x_J*y_C*y_F^2+3*3^{1/2}*x_J*y_C^2*y_F-3^{1/2}*x_J*y_D*y_F^2+2*3^{1/2}*x_K*y_C*y_F^2-3*3^{1/2}*x_K*y_C^2*y_F+3^{1/2}*x_J*y_E*y_F^2+3^{1/2}*x_K*y_D*y_F^2-3^{1/2}*x_K*y_E*y_F^2+6*x_C^2*x_D*x_E*x_J+3*x_C*x_D*x_F^2*x_J+6*x_C*x_D^2*x_F*x_J-6*x_C^2*x_D*x_E*x_K-3*x_C^2*x_D*x_F*x_J-3*x_C*x_D*x_F^2*x_K+3*x_C*x_E*x_F^2*x_J-6*x_C*x_D^2*x_F*x_K-6*x_C*x_E^2*x_F*x_J+3*x_C^2*x_D*x_F*x_K-3*x_C^2*x_E*x_F*x_J-3*x_C*x_E*x_F^2*x_K+6*x_C*x_E^2*x_F*x_K-6*x_D*x_E*x_F^2*x_J+3*x_C^2*x_E*x_F*x_K+6*x_D*x_E*x_F^2*x_K-12*x_C^2*x_D*x_J*x_K+12*x_C^2*x_E*x_J*x_K+12*x_C*x_F^2*x_J*x_K-12*x_C^2*x_F*x_J*x_K-12*x_D*x_F^2*x_J*x_K+12*x_E*x_F^2*x_J*x_K+4*x_C*x_D*x_J*y_C^2-4*x_C*x_D*x_K*y_C^2-4*x_C*x_E*x_J*y_C^2+4*x_C*x_E*x_K*y_C^2+5*x_C*x_F*x_J*y_C^2-6*x_D*x_E*x_J*y_C^2-9*x_C*x_D*x_J*y_F^2-5*x_C*x_F*x_K*y_C^2+6*x_D*x_E*x_K*y_C^2-7*x_D*x_F*x_J*y_C^2+9*x_C*x_D*x_K*y_F^2+7*x_C*x_E*x_J*y_F^2+7*x_D*x_F*x_K*y_C^2+9*x_E*x_F*x_J*y_C^2-7*x_C*x_E*x_K*y_F^2-5*x_C*x_F*x_J*y_F^2+6*x_D*x_E*x_J*y_F^2-9*x_E*x_F*x_K*y_C^2+5*x_C*x_F*x_K*y_F^2-6*x_D*x_E*x_K*y_F^2+4*x_D*x_F*x_J*y_F^2-4*x_D*x_F*x_K*y_F^2-4*x_E*x_F*x_J*y_F^2-4*x_D*x_J*x_K*y_C^2+4*x_E*x_F*x_K*y_F^2+4*x_E*x_J*x_K*y_C^2-4*x_C*x_J*x_K*y_F^2+4*x_F*x_J*x_K*y_C^2-4*x_D*x_J*x_K*y_F^2+4*x_E*x_J*x_K*y_F^2-4*x_C^2*x_J*y_C*y_D+4*x_C^2*x_J*y_C*y_E+4*x_C^2*x_K*y_C*y_D-5*x_C^2*x_J*y_C*y_F-4*x_C^2*x_K*y_C*y_E+5*x_C^2*x_J*y_D*y_F+5*x_C^2*x_K*y_C*y_F-2*x_D^2*x_J*y_C*y_F+5*x_F^2*x_J*y_C*y_D-5*x_C^2*x_J*y_E*y_F-5*x_C^2*x_K*y_D*y_F+2*x_D^2*x_K*y_C*y_F+2*x_E^2*x_J*y_C*y_F-5*x_F^2*x_J*y_C*y_E-5*x_F^2*x_K*y_C*y_D+5*x_C^2*x_K*y_E*y_F-2*x_E^2*x_K*y_C*y_F+5*x_F^2*x_J*y_C*y_F+5*x_F^2*x_K*y_C*y_E-4*x_F^2*x_J*y_D*y_F-5*x_F^2*x_K*y_C*y_F+4*x_F^2*x_J*y_E*y_F+4*x_F^2*x_K*y_D*y_F-4*x_F^2*x_K*y_E*y_F-3*x_J*y_C*y_D*y_F^2-3*x_J*y_C^2*y_D*y_F+3*x_J*y_C*y_E*y_F^2+3*x_J*y_C^2*y_E*y_F+3*x_K*y_C*y_D*y_F^2+3*x_K*y_C^2*y_D*y_F-3*x_K*y_C*y_E*y_F^2-3*x_K*y_C^2*y_E*y_F+2*3^{1/2}*x_C^2*x_D*x_J*y_C-4*3^{1/2}*x_C*x_E^2*x_J*y_C+2*3^{1/2}*x_C^2*x_D*x_J*y_D-2*3^{1/2}*x_C^2*x_D*x_K*y_C-2*3^{1/2}*x_C^2*x_E*x_J*y_C+4*3^{1/2}*x_C*x_E^2*x_K*y_C+4*3^{1/2}*x_C*x_F^2*x_J*y_C-2*3^{1/2}*x_C^2*x_D*x_J*y_E-2*3^{1/2}*x_C^2*x_D*x_K*y_D-4*3^{1/2}*x_C^2*x_E*x_J*y_D+2*3^{1/2}*x_C^2*x_E*x_K*y_C-3^{1/2}*x_C^2*x_F*x_J*y_C+6*3^{1/2}*x_C*x_D^2*x_J*y_F-3^{1/2}*x_C*x_F^2*x_J*y_D-4*3^{1/2}*x_C*x_F^2*x_K*y_C-3^{1/2}*x_D*x_F^2*x_J*y_C+3*3^{1/2}*x_C^2*x_D*x_J*y_F+2*3^{1/2}*x_C^2*x_D*x_K*y_E+4*3^{1/2}*x_C^2*x_E*x_J*y_E+4*3^{1/2}*x_C^2*x_E*x_K*y_D+3^{1/2}*x_C^2*x_F*x_J*y_D+3^{1/2}*x_C^2*x_F*x_K*y_C+2*3^{1/2}*x_D^2*x_F*x_J*y_C-6*3^{1/2}*x_C*x_D^2*x_K*y_F+2*3^{1/2}*x_C*x_E^2*x_J*y_F+3^{1/2}*x_C*x_F^2*x_J*y_E+3^{1/2}*x_C*x_F^2*x_K*y_D+4*3^{1/2}*x_D*x_F^2*x_J*y_D+3^{1/2}*x_D*x_F^2*x_K*y_C+3*3^{1/2}*x_E*x_F^2*x_J*y_C-3*3^{1/2}*x_C^2*x_D*x_K*y_F-3^{1/2}*x_C^2*x_E*x_J*y_F-4*3^{1/2}*x_C^2*x_E*x_K*y_E-3^{1/2}*x_C^2*x_F*x_J*y_E-3^{1/2}*x_C^2*x_F*x_K*y_D-2*3^{1/2}*x_D^2*x_F*x_K*y_C+6*3^{1/2}*x_E^2*x_F*x_J*y_C-2*3^{1/2}*x_C*x_E^2*x_K*y_F-3^{1/2}*x_C*x_F^2*x_J*y_F-3^{1/2}*x_C*x_F^2*x_K*y_E-4*3^{1/2}*x_D*x_F^2*x_J*y_E-4*3^{1/2}*x_D*x_F^2*x_K*y_D-2*3^{1/2}*x_E*x_F^2*x_J*y_D-3*3^{1/2}*x_E*x_F^2*x_K*y_C+3^{1/2}*x_C^2*x_E*x_K*y_F+4*3^{1/2}*x_C^2*x_F*x_J*y_F+3^{1/2}*x_C^2*x_F*x_K*y_E-6*3^{1/2}*x_E^2*x_F*x_K*y_C+3^{1/2}*x_C*x_F^2*x_K*y_F-2*3^{1/2}*x_D*x_F^2*x_J*y_F+4*3^{1/2}*x_D*x_F^2*x_K*y_E+2*3^{1/2}*x_E*x_F^2*x_J*y_E+2*3^{1/2}*x_E*x_F^2*x_K*y_D-4*3^{1/2}*x_C^2*x_F*x_K*y_F-4*3^{1/2}*x_D^2*x_F*x_J*y_F+2*3^{1/2}*x_D*x_F^2*x_K*y_F+2*3^{1/2}*x_E*x_F^2*x_J*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_E+4*3^{1/2}*x_D^2*x_F*x_K*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_F-4*3^{1/2}*x_C^2*x_J*x_K*y_D+4*3^{1/2}*x_C^2*x_J*x_K*y_E+4*3^{1/2}*x_C^2*x_J*x_K*y_F+4*3^{1/2}*x_F^2*x_J*x_K*y_C+4*3^{1/2}*x_F^2*x_J*x_K*y_D-4*3^{1/2}*x_F^2*x_J*x_K*y_E+2*3^{1/2}*x_C*x_J*y_C^2*y_D-2*3^{1/2}*x_C*x_J*y_C^2*y_E-2*3^{1/2}*x_C*x_K*y_C^2*y_D+2*3^{1/2}*x_D*x_J*y_C^2*y_D+4*3^{1/2}*x_C*x_J*y_C*y_F^2-3^{1/2}*x_C*x_J*y_C^2*y_F+2*3^{1/2}*x_C*x_K*y_C^2*y_E-2*3^{1/2}*x_D*x_J*y_C^2*y_E-2*3^{1/2}*x_D*x_K*y_C^2*y_D-3^{1/2}*x_C*x_J*y_D*y_F^2-4*3^{1/2}*x_C*x_K*y_C*y_F^2+3^{1/2}*x_C*x_K*y_C^2*y_F+3*3^{1/2}*x_D*x_J*y_C*y_F^2-3^{1/2}*x_D*x_J*y_C^2*y_F+2*3^{1/2}*x_D*x_K*y_C^2*y_E+3^{1/2}*x_F*x_J*y_C^2*y_D+3^{1/2}*x_C*x_J*y_E*y_F^2+3^{1/2}*x_C*x_K*y_D*y_F^2-3*3^{1/2}*x_D*x_K*y_C*y_F^2+3^{1/2}*x_D*x_K*y_C^2*y_F-3^{1/2}*x_E*x_J*y_C*y_F^2+3*3^{1/2}*x_E*x_J*y_C^2*y_F-3^{1/2}*x_F*x_J*y_C^2*y_E-3^{1/2}*x_F*x_K*y_C^2*y_D-3^{1/2}*x_C*x_K*y_E*y_F^2-2*3^{1/2}*x_E*x_J*y_D*y_F^2+3^{1/2}*$

$x_E*x_K*y_C*y_F^2-3*3^{1/2}*x_E*x_K*y_C^2*y_F-3^{1/2}*x_F*x_J*y_C*y_F^2+4*3^{1/2}*x_F*x_J*y_C^2*y_F+3^{1/2}*x_F*x_K*y_C^2*y_E+2*3^{1/2}*x_E*x_J*y_E*y_F^2+2*3^{1/2}*x_E*x_K*y_D*y_F^2-2*3^{1/2}*x_F*x_J*y_D*y_F^2+3^{1/2}*x_F*x_K*y_C*y_F^2-4*3^{1/2}*x_F*x_K*y_C^2*y_F-2*3^{1/2}*x_E*x_K*y_E*y_F^2+2*3^{1/2}*x_F*x_J*y_E*y_F^2+2*3^{1/2}*x_F*x_K*y_D*y_F^2-2*3^{1/2}*x_F*x_K*y_E*y_F^2+4*3^{1/2}*x_J*x_K*y_C^2*y_D-4*3^{1/2}*x_J*x_K*y_C^2*y_E+4*3^{1/2}*x_J*x_K*y_C*y_F^2+4*3^{1/2}*x_J*x_K*y_C^2*y_F-4*3^{1/2}*x_J*x_K*y_D*y_F^2+4*3^{1/2}*x_J*x_K*y_E*y_F^2-4*3^{1/2}*x_C*x_D*x_J*y_D+4*3^{1/2}*x_C*x_D*x_J*y_E+4*3^{1/2}*x_C*x_D*x_K*y_D+8*3^{1/2}*x_C*x_E*x_J*y_D+2*3^{1/2}*x_C*x_F*x_J*y_C-4*3^{1/2}*x_D*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_J*y_F-4*3^{1/2}*x_C*x_D*x_K*y_E-8*3^{1/2}*x_C*x_E*x_J*y_E-8*3^{1/2}*x_C*x_E*x_K*y_D-2*3^{1/2}*x_C*x_F*x_J*y_D-2*3^{1/2}*x_C*x_F*x_K*y_C+4*3^{1/2}*x_D*x_E*x_K*y_C-4*3^{1/2}*x_D*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D*x_K*y_F-2*3^{1/2}*x_C*x_E*x_J*y_F+8*3^{1/2}*x_C*x_E*x_K*y_E+2*3^{1/2}*x_C*x_F*x_J*y_E+2*3^{1/2}*x_C*x_F*x_K*y_D+6*3^{1/2}*x_D*x_F*x_J*y_D+4*3^{1/2}*x_D*x_F*x_K*y_C+4*3^{1/2}*x_E*x_F*x_J*y_C+2*3^{1/2}*x_C*x_E*x_K*y_F-8*3^{1/2}*x_C*x_F*x_J*y_F-2*3^{1/2}*x_C*x_F*x_K*y_E+8*3^{1/2}*x_D*x_E*x_J*y_F-6*3^{1/2}*x_D*x_F*x_J*y_E-6*3^{1/2}*x_D*x_F*x_K*y_D-6*3^{1/2}*x_E*x_F*x_J*y_D-4*3^{1/2}*x_E*x_F*x_K*y_C+8*3^{1/2}*x_C*x_F*x_K*y_F-8*3^{1/2}*x_D*x_E*x_K*y_F-4*3^{1/2}*x_D*x_F*x_J*y_F+6*3^{1/2}*x_D*x_F*x_K*y_E+6*3^{1/2}*x_E*x_F*x_J*y_E+6*3^{1/2}*x_E*x_F*x_K*y_D+4*3^{1/2}*x_D*x_F*x_K*y_F+4*3^{1/2}*x_E*x_F*x_J*y_F-6*3^{1/2}*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_J*x_K*y_D-8*3^{1/2}*x_D*x_J*x_K*y_C-4*3^{1/2}*x_E*x_F*x_K*y_F-8*3^{1/2}*x_C*x_J*x_K*y_E+8*3^{1/2}*x_E*x_J*x_K*y_C-8*3^{1/2}*x_C*x_J*x_K*y_F-8*3^{1/2}*x_D*x_J*x_K*y_F+8*3^{1/2}*x_E*x_J*x_K*y_F-4*3^{1/2}*x_J*y_C*y_D*y_F+4*3^{1/2}*x_J*y_C*y_E*y_F+4*3^{1/2}*x_K*y_C*y_D*y_F-4*3^{1/2}*x_K*y_C*y_E*y_F+24*x_C*x_D*x_F*x_J*x_K-24*x_C*x_E*x_F*x_J*x_K-8*x_C*x_D*x_J*y_C*y_D+8*x_C*x_D*x_J*y_C*y_E+8*x_C*x_D*x_K*y_C*y_D+4*x_C*x_E*x_J*y_C*y_D-8*x_C*x_D*x_J*y_C*y_F-8*x_C*x_D*x_K*y_C*y_E-4*x_C*x_E*x_J*y_C*y_E-4*x_C*x_E*x_K*y_C*y_D+4*x_C*x_F*x_J*y_C*y_D-2*x_C*x_D*x_J*y_D*y_F+8*x_C*x_D*x_K*y_C*y_F+4*x_C*x_E*x_K*y_C*y_E-4*x_C*x_F*x_J*y_C*y_E-4*x_C*x_F*x_K*y_C*y_D+10*x_D*x_F*x_J*y_C*y_D+2*x_C*x_D*x_J*y_E*y_F+2*x_C*x_D*x_K*y_D*y_F+10*x_C*x_E*x_J*y_D*y_F+4*x_C*x_F*x_K*y_C*y_E-10*x_D*x_F*x_J*y_C*y_E-10*x_D*x_F*x_K*y_C*y_D-2*x_E*x_F*x_J*y_C*y_D-2*x_C*x_D*x_K*y_E*y_F-10*x_C*x_E*x_J*y_E*y_F-10*x_C*x_E*x_K*y_D*y_F+4*x_C*x_F*x_J*y_D*y_F+10*x_D*x_F*x_K*y_C*y_E+2*x_E*x_F*x_J*y_C*y_E+2*x_E*x_F*x_K*y_C*y_D+10*x_C*x_E*x_K*y_E*y_F-4*x_C*x_F*x_J*y_E*y_F-4*x_C*x_F*x_K*y_D*y_F+4*x_D*x_F*x_J*y_D*y_F+8*x_E*x_F*x_J*y_C*y_F-2*x_E*x_F*x_K*y_C*y_E+4*x_C*x_F*x_K*y_E*y_F-8*x_C*x_J*x_K*y_C*y_D-4*x_D*x_F*x_J*y_E*y_F-4*x_D*x_F*x_K*y_D*y_F-8*x_E*x_F*x_J*y_D*y_F-8*x_E*x_F*x_K*y_C*y_F+8*x_C*x_J*x_K*y_C*y_E+4*x_D*x_F*x_K*y_E*y_F+8*x_E*x_F*x_J*y_E*y_F+8*x_E*x_F*x_K*y_D*y_F-16*x_C*x_J*x_K*y_C*y_F-8*x_E*x_F*x_K*y_E*y_F+16*x_C*x_J*x_K*y_D*y_F-8*x_D*x_J*x_K*y_C*y_F+16*x_F*x_J*x_K*y_C*y_D-16*x_C*x_J*x_K*y_E*y_F+8*x_E*x_J*x_K*y_C*y_F-16*x_F*x_J*x_K*y_C*y_E+16*x_F*x_J*x_K*y_C*y_F-8*x_F*x_J*x_K*y_D*y_F+8*x_F*x_J*x_K*y_E*y_F+4*3^{1/2}*x_C*x_D*x_E*x_J*y_C-4*3^{1/2}*x_C*x_D*x_E*x_K*y_C-6*3^{1/2}*x_C*x_D*x_F*x_J*y_D-8*3^{1/2}*x_C*x_D*x_E*x_J*y_F+6*3^{1/2}*x_C*x_D*x_F*x_J*y_E+6*3^{1/2}*x_C*x_D*x_F*x_K*y_D+6*3^{1/2}*x_C*x_E*x_F*x_J*y_D-8*3^{1/2}*x_D*x_E*x_F*x_J*y_C+8*3^{1/2}*x_C*x_D*x_E*x_K*y_F-6*3^{1/2}*x_C*x_D*x_F*x_K*y_E-6*3^{1/2}*x_C*x_E*x_F*x_J*y_E-6*3^{1/2}*x_C*x_E*x_F*x_K*y_D+8*3^{1/2}*x_D*x_E*x_F*x_K*y_C+6*3^{1/2}*x_C*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_D*x_J*x_K*y_C+4*3^{1/2}*x_D*x_E*x_F*x_J*y_F-8*3^{1/2}*x_C*x_E*x_J*x_K*y_C-4*3^{1/2}*x_D*x_E*x_F*x_K*y_F+8*3^{1/2}*x_C*x_D*x_J*x_K*y_F-8*3^{1/2}*x_D*x_F*x_J*x_K*y_C-8*3^{1/2}*x_C*x_E*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_C-8*3^{1/2}*x_D*x_F*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_F+4*3^{1/2}*x_C*x_J*y_C*y_D*y_F-4*3^{1/2}*x_C*x_J*y_C*y_E*y_F-4*3^{1/2}*x_C*x_K*y_C*y_D*y_F+2*3^{1/2}*x_D*x_J*y_C*y_D*y_F+4*3^{1/2}*x_C*x_K*y_C*y_E*y_F-2*3^{1/2}*x_D*x_J*y_C*y_E*y_F-2*3^{1/2}*x_D*x_K*y_C*y_D*y_F-2*3^{1/2}*x_E*x_J*y_C*y_D*y_F+2*3^{1/2}*x_D*x_K*y_C*y_E*y_F+2*3^{1/2}*x_E*x_J*y_C*y_E*y_F+2*3^{1/2}*x_E*x_K*y_C*y_D*y_F-4*3^{1/2}*$

$x_F*x_J*y_C*y_D*y_F-2*3^{1/2}*x_E*x_K*y_C*y_E*y_F+4*3^{1/2}*x_F*x_J*y_C*y_E*y_F+4*3^{1/2}*x_F*x_K*y_C*y_D*y_F-4*3^{1/2}*x_F*x_K*y_C*y_E*y_F)/(2*(3*x_J-x_K)*(y_C+y_F-3^{1/2}*x_C+3^{1/2}*x_F+3^{1/2})*(y_E-y_D+y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F+x_C*y_D-x_D*y_C-x_C*y_E+x_E*y_C-x_C*y_F+x_F*y_C-x_D*y_F+x_F*y_D+x_E*y_F-x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F)), (3*x_F*x_K-3*x_F*x_J-3*x_F^2*x_J+3*x_F^2*x_K+2*x_J*y_D^2+4*x_J*y_E^2-2*x_K*y_D^2-x_J*y_F^2-4*x_K*y_E^2+x_K*y_F^2+3*x_C*x_F^2*x_J-3*x_C^2*x_F*x_J-3*x_C*x_F^2*x_K+3*x_C^2*x_F*x_K-2*x_C*x_J*y_D^2-2*x_D*x_J*y_C^2-4*x_C*x_J*y_E^2+2*x_C*x_K*y_D^2+2*x_D*x_K*y_C^2+2*x_E*x_J*y_C^2+x_C*x_J*y_F^2+4*x_C*x_K*y_E^2-2*x_E*x_K*y_C^2-x_F*x_J*y_C^2-x_C*x_K*y_F^2-2*x_D*x_J*y_F^2+4*x_F*x_J*y_D^2+x_F*x_K*y_C^2+2*x_D*x_K*y_F^2+2*x_E*x_J*y_F^2+2*x_F*x_J*y_E^2-4*x_F*x_K*y_D^2-2*x_E*x_K*y_F^2-2*x_F*x_K*y_E^2-2*3^{1/2}*x_J*y_D+2*3^{1/2}*x_J*y_E+2*3^{1/2}*x_K*y_D-3^{1/2}*x_J*y_F-2*3^{1/2}*x_K*y_E+3^{1/2}*x_K*y_F+6*x_C*x_F*x_J-6*x_C*x_F*x_K-3*x_D*x_F*x_J+3*x_D*x_F*x_K+3*x_E*x_F*x_J-3*x_E*x_F*x_K-2*x_J*y_C*y_D+2*x_J*y_C*y_E+2*x_K*y_C*y_D+2*x_J*y_C*y_F-6*x_J*y_D*y_E-2*x_K*y_C*y_E-x_J*y_D*y_F-2*x_K*y_C*y_F+6*x_K*y_D*y_E+3*x_J*y_E*y_F+x_K*y_D*y_F-3*x_K*y_E*y_F-4*x_K*y_D*y_J+4*x_K*y_E*y_J+4*x_K*y_F*y_J+4*3^{1/2}*x_C*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C-4*3^{1/2}*x_C*x_J*y_E-4*3^{1/2}*x_C*x_K*y_D-2*3^{1/2}*x_D*x_J*y_D+2*3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C+2*3^{1/2}*x_C*x_J*y_F+4*3^{1/2}*x_C*x_K*y_E+2*3^{1/2}*x_D*x_K*y_D+2*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C-2*3^{1/2}*x_F*x_J*y_C-2*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F-2*3^{1/2}*x_E*x_K*y_D-3^{1/2}*x_F*x_J*y_D+2*3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3^{1/2}*x_E*x_J*y_F-3^{1/2}*x_F*x_J*y_E+3^{1/2}*x_F*x_K*y_D-3^{1/2}*x_E*x_K*y_F-2*3^{1/2}*x_F*x_J*y_F+3^{1/2}*x_F*x_K*y_E+2*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_D*x_K*y_J+4*3^{1/2}*x_E*x_K*y_J-4*3^{1/2}*x_F*x_K*y_J+3*x_C*x_D*x_F*x_J-3*x_C*x_D*x_F*x_K-3*x_C*x_E*x_F*x_J+3*x_C*x_E*x_F*x_K+2*x_C*x_J*y_C*y_D-2*x_C*x_J*y_C*y_E-2*x_C*x_K*y_C*y_D+2*x_D*x_J*y_C*y_D-2*x_C*x_J*y_C*y_F+6*x_C*x_J*y_D*y_E+2*x_C*x_K*y_C*y_E-4*x_D*x_J*y_C*y_E-2*x_D*x_K*y_C*y_D-2*x_E*x_J*y_C*y_D+x_C*x_J*y_D*y_F+2*x_C*x_K*y_C*y_F-6*x_C*x_K*y_D*y_E-x_D*x_J*y_C*y_F+4*x_D*x_K*y_C*y_E+4*x_E*x_J*y_C*y_E+2*x_E*x_K*y_C*y_D+3*x_F*x_J*y_C*y_D-3*x_C*x_J*y_E*y_F-x_C*x_K*y_D*y_F-4*x_D*x_J*y_D*y_F+x_D*x_K*y_C*y_F+x_E*x_J*y_C*y_F-4*x_E*x_K*y_C*y_E-x_F*x_J*y_C*y_E-3*x_F*x_K*y_C*y_D+3*x_C*x_K*y_E*y_F+2*x_D*x_J*y_E*y_F+4*x_D*x_K*y_D*y_F+4*x_E*x_J*y_D*y_F-x_E*x_K*y_C*y_F+2*x_F*x_J*y_C*y_F-6*x_F*x_J*y_D*y_E+x_F*x_K*y_C*y_E-2*x_D*x_K*y_E*y_F-2*x_E*x_J*y_E*y_F-4*x_E*x_K*y_D*y_F+2*x_F*x_J*y_D*y_F-2*x_F*x_K*y_C*y_F+6*x_F*x_K*y_D*y_E+2*x_E*x_K*y_E*y_F-2*x_F*x_J*y_E*y_F-2*x_F*x_K*y_D*y_F+4*x_C*x_K*y_D*y_J-4*x_D*x_K*y_C*y_J+2*x_F*x_K*y_E*y_F-4*x_C*x_K*y_E*y_J+4*x_E*x_K*y_C*y_J-4*x_C*x_K*y_F*y_J+4*x_F*x_K*y_C*y_J-4*x_D*x_K*y_F*y_J+4*x_F*x_K*y_D*y_J+4*x_E*x_K*y_F*y_J-4*x_F*x_K*y_E*y_J-2*3^{1/2}*x_C^2*x_J*y_D+2*3^{1/2}*x_C^2*x_J*y_E+2*3^{1/2}*x_C^2*x_K*y_D-3^{1/2}*x_C^2*x_J*y_F-2*3^{1/2}*x_C^2*x_K*y_E-3^{1/2}*x_F^2*x_J*y_C+3^{1/2}*x_C^2*x_K*y_F+2*3^{1/2}*x_F^2*x_J*y_D+3^{1/2}*x_F^2*x_K*y_C-2*3^{1/2}*x_F^2*x_J*y_E-2*3^{1/2}*x_F^2*x_K*y_D+2*3^{1/2}*x_F^2*x_K*y_E+2*3^{1/2}*x_J*y_C*y_D^2-2*3^{1/2}*x_K*y_C*y_D^2+3^{1/2}*x_J*y_C*y_F^2+3^{1/2}*x_J*y_C^2*y_F-3^{1/2}*x_K*y_C*y_F^2-3^{1/2}*x_K*y_C^2*y_F+2*3^{1/2}*x_J*y_E^2*y_F-2*3^{1/2}*x_K*y_E^2*y_F+2*3^{1/2}*x_C*x_D*x_J*y_C+2*3^{1/2}*x_C*x_D*x_J*y_D-2*3^{1/2}*x_C*x_D*x_K*y_C-2*3^{1/2}*x_C*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_K*y_D-2*3^{1/2}*x_C*x_E*x_J*y_D+2*3^{1/2}*x_C*x_E*x_K*y_C+2*3^{1/2}*x_C*x_F*x_J*y_C+3^{1/2}*x_C*x_D*x_J*y_F+2*3^{1/2}*x_C*x_E*x_K*y_D+3^{1/2}*x_C*x_F*x_J*y_D-2*3^{1/2}*x_C*x_F*x_K*y_C-3^{1/2}*x_D*x_F*x_J*y_C-3^{1/2}*x_C*x_D*x_K*y_F-3^{1/2}*x_C*x_E*x_J*y_F+3^{1/2}*x_C*x_F*x_J*y_E-3^{1/2}*x_C*x_F*x_K*y_D+3^{1/2}*x_D*x_F*x_K*y_C+3^{1/2}*x_E*x_F*x_J*y_C+3^{1/2}*x_C*x_E*x_K*y_F+2*3^{1/2}*x_C*x_F*x_J*y_F-3^{1/2}*x_C*x_F*x_K*y_E-2*3^{1/2}*x_D*x_F*x_J*y_E-3^{1/2}*x_E*x_F*x_K*y_C-2*3^{1/2}*x_C*x_F*x_K*y_F-2*3^{1/2}*x_D*x_F*x_J*y_F+2*3^{1/2}*x_D*x_F*x_K*y_E+2*3^{1/2}*x_E*x_F*x_J*y_E+2*3^{1/2}*x_D*x_F*x_K*y_F+2*3^{1/2}*x_E*x_F*x_J*y_F-2*3^{1/2}*x_E*$

$x_F*x_K*y_E+4*3^{1/2}*x_C*x_D*x_K*y_J-2*3^{1/2}*x_E*x_F*x_K*y_F-4*3^{1/2}*x_C*x_E*x_K*y_J+4*3^{1/2}*x_C*x_F*x_K*y_J-4*3^{1/2}*x_D*x_F*x_K*y_J+4*3^{1/2}*x_E*x_F*x_K*y_J-2*3^{1/2}*x_J*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_D*y_F+2*3^{1/2}*x_K*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_E*y_F-3^{1/2}*x_K*y_C*y_D*y_F-2*3^{1/2}*x_J*y_D*y_E*y_F-3^{1/2}*x_K*y_C*y_E*y_F+2*3^{1/2}*x_K*y_D*y_E*y_F+4*3^{1/2}*x_K*y_C*y_D*y_J-4*3^{1/2}*x_K*y_C*y_E*y_J+4*3^{1/2}*x_K*y_C*y_F*y_J-4*3^{1/2}*x_K*y_D*y_F*y_J+4*3^{1/2}*x_K*y_E*y_F*y_J)/(2*(3*x_J-x_K)*(y_E-y_D+y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F+x_C*y_D-x_D*y_C-x_C*y_E+x_E*y_C-x_C*y_F+x_F*y_C-x_D*y_F+x_F*y_D+x_E*y_F-x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F))).$

Case 2: the mounted triangles are internal.

The line between the W coordinates in theorems 2.1 and 2.3 is given by the equation

$y = ((-(x_K-x_J)*y_F+(x_K-x_J)*y_E+(x_J-x_K)*y_E+(x_J-x_K)*y_C+3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_K+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_J-3^{1/2}*(x_E-x_D)*x_J)*(2*(x_K-3*x_J)*x+3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-x_E-x_D-2)*x_K+(x_E+x_D+2)*x_J))/(2*(x_K-3*x_J)*(-3^{1/2}*(x_K-x_J)*y_F+3^{1/2}*(x_K-x_J)*y_C-(4*x_J-x_E-x_D-2)*x_K-(-4*x_J+x_F+x_E+x_D+x_C+1)*x_K-(-x_F-x_E-x_D-x_C-1)*x_J-(x_E+x_D+2)*x_J))+(-4*x_K*y_J+(x_K-x_J)*y_E-(x_J-x_K)*y_D+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)).$

The line between C_1 in theorem 2.1 and G_1 in theorem 2.3 is given by the equation

$y = (((2*x_K*y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_D)/(x_K-3*x_J)-(4*x_K*y_J-2*(x_K-x_J)*y_F-2*(x_K-x_J)*y_E+(x_J-x_K)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))*(x+(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J))))/(((2*x_J-x_F-x_D-1)*x_K+(x_F+x_D+1)*x_J)/(x_K-3*x_J)-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*(x_F+x_E)-x_C-1)*x_K+(2*(x_F+x_E)+x_C+1)*x_J)/(2*(x_K-3*x_J)))+(-4*x_K*y_J+2*(x_K-x_J)*y_F+2*(x_K-x_J)*y_E-(x_J-x_K)*y_C+3^{1/2}*(x_C-1)*x_K-3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)).$

The line between G_1 in theorem 2.1 and C_1 in theorem 2.3 is given by the equation

$y = (((2*x_K*y_J+(x_J-x_K)*y_E+(x_J-x_K)*y_C)/(x_K-3*x_J)-(4*x_K*y_J-(x_K-x_J)*y_F-2*(x_K-x_J)*y_D-2*(x_K-x_J)*y_C+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J)))*(x-(3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*(x_D+x_C))*x_K+(-x_F-2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J))))/((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*(x_D+x_C))*x_K+(-x_F-2*(x_D+x_C))*x_J)/(2*(x_K-3*x_J)))+((2*x_J-x_E-x_C)*x_K+(x_E+x_C)*x_J)/(x_K-3*x_J))+(-4*x_K*y_J+(x_K-x_J)*y_F+2*(x_K-x_J)*y_D+2*(x_K-x_J)*y_C-3^{1/2}*x_F*x_K+3^{1/2}*x_F*x_J)/(2*(x_K-3*x_J)).$

One can then verify that the following point lies on all three lines, whose coordinates are given by

$((6*x_D*x_J-6*x_D*x_K-6*x_E*x_J+6*x_E*x_K+3*x_F*x_J-3*x_F*x_K+6*x_D^2*x_J-6*x_D^2*x_K+6*x_F^2*x_J+3*x_F^3*x_J-6*x_F^2*x_K-3*x_F^3*x_K-6*x_J*y_F^2+6*x_K*y_F^2+3^{1/2}*x_J*y_F^3-3^{1/2}*x_K*y_F^3-12*x_C*x_D^2*x_J+6*x_C^2*x_D*x_J+12*x_C*x_D^2*x_K-6*x_C^2*x_D*x_K-6*x_C^2*x_E*x_J-6*x_C*x_F^2*x_J+6*x_C^2*x_E*x_K-3*x_C^2*x_F*x_J-3*x_C*x_F^3*x_J+3*x_C^3*x_F*x_J+6*x_C*x_F^2*x_K+9*x_D*x_F^2*x_J+3*x_C^2*x_F*x_K+6*x_D^2*x_F*x_J+3*x_C*x_F^3*x_K-3*x_C^3*x_F*x_K-9*x_D*x_F^2*x_K-3*x_E*x_F^2*x_J-6*x_D^2*x_F*x_K-6*x_E^2*x_F*x_J+3*x_E*x_F^2*x_K+6*x_E^2*x_F*x_K+12*x_F^2*x_J*x_K+6*x_D*x_J*y_C^2-6*x_D*x_K*y_C^2-6*x_E*x_J*y_C^2+10*x_C*x_J*y_F^2+6*x_E*x_K*y_C^2+3*x_F*x_J*y_C^2-10*x_C*x_K*y_F^2-7*x_D*x_J*y_F^2-3*x_F*x_K*y_C^2+7*x_D*x_K*y_F^2+5*x_E*x_J*y_F^2-5*x_E*x_K*y_F^2-5*x_F*x_J*y_F^2+5*x_F*x_K*y_F^2-4*x_J*x_K*y_F^2+3*x_J*y_C*y_F^3-3*x_J*y_C^3*y_F-3*x_K*y_C*y_F^3+3*x_K*y_C^3*y_F+6*x_C^2*x_D^2*x_J-6*x_C^2*x_D^2*x_K-6*x_E^2*x_F^2*x_J+6*x_E^2*x_F^2*x_K-2*x_D^2*x_J*y_C^2+2*x_D^2*x_K*y_C^2-4*x_E^2*x_J*y_C^2-4*x_C^2*x_J*y_F^2+4*x_E^2*x_K*y_C^2+4*x_F^2*x_J*y_C^2+4*x_C^2*x_K*y_F^2+4*x_D^2*x_J*$

$y_F^2-4*x_F^2*x_K*y_C^2-4*x_D^2*x_K*y_F^2+2*x_E^2*x_J*y_F^2-2*x_E^2*x_K*y_F^2+3*3^{1/2}*x_J*y_F-3*3^{1/2}*x_K*y_F-12*x_C*x_D*x_J+12*x_C*x_D*x_K+12*x_C*x_E*x_J-12*x_C*x_E*x_K-3*x_C*x_F*x_J-6*x_D*x_E*x_J+3*x_C*x_F*x_K+6*x_D*x_E*x_K+15*x_D*x_F*x_J-15*x_D*x_F*x_K-9*x_E*x_F*x_J+9*x_E*x_F*x_K+12*x_D*x_J*x_K-12*x_E*x_J*x_K+12*x_F*x_J*x_K-3*x_J*y_C*y_F+3*x_J*y_D*y_F+3*x_K*y_C*y_F-3*x_J*y_E*y_F-3*x_K*y_D*y_F+3*x_K*y_E*y_F-2*3^{1/2}*x_C*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C+2*3^{1/2}*x_C*x_J*y_E+2*3^{1/2}*x_C*x_K*y_D+2*3^{1/2}*x_D*x_J*y_D+2*3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C-7*3^{1/2}*x_C*x_J*y_F-2*3^{1/2}*x_C*x_K*y_E-2*3^{1/2}*x_D*x_J*y_E-2*3^{1/2}*x_D*x_K*y_D-4*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C-3^{1/2}*x_F*x_J*y_C+7*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F+2*3^{1/2}*x_D*x_K*y_E+4*3^{1/2}*x_E*x_J*y_E+4*3^{1/2}*x_E*x_K*y_D+3^{1/2}*x_F*x_J*y_D+3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3*3^{1/2}*x_E*x_J*y_F-4*3^{1/2}*x_E*x_K*y_E-3^{1/2}*x_F*x_J*y_E-3^{1/2}*x_F*x_K*y_D-3*3^{1/2}*x_E*x_K*y_F+4*3^{1/2}*x_F*x_J*y_F+3^{1/2}*x_F*x_K*y_E-4*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_J*x_K*y_D+4*3^{1/2}*x_J*x_K*y_E+4*3^{1/2}*x_J*x_K*y_F+12*x_C*x_D*x_E*x_J-12*x_C*x_D*x_E*x_K-18*x_C*x_D*x_F*x_J+18*x_C*x_D*x_F*x_K+6*x_C*x_E*x_F*x_J-6*x_C*x_E*x_F*x_K-24*x_C*x_D*x_J*x_K+24*x_C*x_E*x_J*x_K-24*x_C*x_F*x_J*x_K+24*x_D*x_F*x_J*x_K-24*x_E*x_F*x_J*x_K-4*x_C*x_J*y_C*y_D+4*x_C*x_J*y_C*y_E+4*x_C*x_K*y_C*y_D-8*x_D*x_J*y_C*y_D-2*x_C*x_J*y_C*y_F-4*x_C*x_K*y_C*y_E+8*x_D*x_J*y_C*y_E+8*x_D*x_K*y_C*y_D+4*x_E*x_J*y_C*y_D+2*x_C*x_J*y_D*y_F+2*x_C*x_K*y_C*y_F-4*x_D*x_J*y_C*y_F-8*x_D*x_K*y_C*y_E-4*x_E*x_J*y_C*y_E-4*x_E*x_K*y_C*y_D-4*x_F*x_J*y_C*y_D-2*x_C*x_J*y_E*y_F-2*x_C*x_K*y_D*y_F-2*x_D*x_J*y_D*y_F+4*x_D*x_K*y_C*y_F-4*x_E*x_J*y_C*y_F+4*x_E*x_K*y_C*y_E+4*x_F*x_J*y_C*y_E+4*x_F*x_K*y_C*y_D+2*x_C*x_K*y_E*y_F+2*x_D*x_J*y_E*y_F+2*x_D*x_K*y_D*y_F+10*x_E*x_J*y_D*y_F+4*x_E*x_K*y_C*y_F-8*x_F*x_J*y_C*y_F-4*x_F*x_K*y_C*y_E-2*x_D*x_K*y_E*y_F-10*x_E*x_J*y_E*y_F-10*x_E*x_K*y_D*y_F+8*x_F*x_J*y_D*y_F+8*x_F*x_K*y_C*y_F+10*x_E*x_K*y_E*y_F-8*x_F*x_J*y_E*y_F-8*x_F*x_K*y_D*y_F+8*x_F*x_K*y_E*y_F-8*x_J*x_K*y_C*y_D+8*x_J*x_K*y_C*y_E-16*x_J*x_K*y_C*y_F+16*x_J*x_K*y_D*y_F-16*x_J*x_K*y_E*y_F+4*3^{1/2}*x_C^2*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C^3-2*3^{1/2}*x_C^3*x_J*y_D-4*3^{1/2}*x_C^2*x_J*y_E-4*3^{1/2}*x_C^2*x_K*y_D+4*3^{1/2}*x_E^2*x_J*y_C+2*3^{1/2}*x_D*x_K*y_C^3+2*3^{1/2}*x_E*x_J*y_C^3+2*3^{1/2}*x_C^3*x_J*y_E+2*3^{1/2}*x_C^3*x_K*y_D+5*3^{1/2}*x_C^2*x_J*y_F+4*3^{1/2}*x_C^2*x_K*y_E-4*3^{1/2}*x_E^2*x_K*y_C-2*3^{1/2}*x_F^2*x_J*y_C-3^{1/2}*x_C*x_J*y_F^3-2*3^{1/2}*x_E*x_K*y_C^3-3^{1/2}*x_F*x_J*y_C^3-3^{1/2}*x_C^3*x_J*y_F-2*3^{1/2}*x_C^3*x_K*y_E-3^{1/2}*x_F^3*x_J*y_C-5*3^{1/2}*x_C^2*x_K*y_F-6*3^{1/2}*x_D^2*x_J*y_F+3*3^{1/2}*x_F^2*x_J*y_D+2*3^{1/2}*x_F^2*x_K*y_C+3^{1/2}*x_C*x_K*y_F^3+2*3^{1/2}*x_D*x_J*y_F^3+3^{1/2}*x_F*x_K*y_C^3+3^{1/2}*x_C^3*x_K*y_F+2*3^{1/2}*x_F^3*x_J*y_D+3^{1/2}*x_F^3*x_K*y_C+6*3^{1/2}*x_D^2*x_K*y_F-2*3^{1/2}*x_E^2*x_J*y_F-3*3^{1/2}*x_F^2*x_J*y_E-3*3^{1/2}*x_F^2*x_K*y_D-2*3^{1/2}*x_D*x_K*y_F^3-2*3^{1/2}*x_E*x_J*y_F^3-2*3^{1/2}*x_F^3*x_J*y_E-2*3^{1/2}*x_F^3*x_K*y_D+2*3^{1/2}*x_E^2*x_K*y_F+3^{1/2}*x_F^2*x_J*y_F+3*3^{1/2}*x_F^2*x_K*y_E+2*3^{1/2}*x_E*x_K*y_F^3+2*3^{1/2}*x_F^3*x_K*y_E-3^{1/2}*x_F^2*x_K*y_F-2*3^{1/2}*x_J*y_C*y_F^2+3*3^{1/2}*x_J*y_C^2*y_F-3^{1/2}*x_J*y_D*y_F^2+2*3^{1/2}*x_K*y_C*y_F^2-3*3^{1/2}*x_K*y_C^2*y_F+3^{1/2}*x_J*y_E*y_F^2+3^{1/2}*x_K*y_D*y_F^2-3^{1/2}*x_K*y_E*y_F^2-6*x_C^2*x_D*x_E*x_J-3*x_C*x_D*x_F^2*x_J-6*x_C*x_D^2*x_F*x_J+6*x_C^2*x_D*x_E*x_K+3*x_C^2*x_D*x_F*x_J+3*x_C*x_D*x_F^2*x_K-3*x_C*x_E*x_F^2*x_J+6*x_C*x_D^2*x_F*x_K+6*x_C*x_E^2*x_F*x_J-3*x_C^2*x_D*x_F*x_K+3*x_C^2*x_E*x_F*x_J+3*x_C*x_E*x_F^2*x_K-6*x_C*x_E^2*x_F*x_K+6*x_D*x_E*x_F^2*x_J-3*x_C^2*x_E*x_F*x_K-6*x_D*x_E*x_F^2*x_K+12*x_C^2*x_D*x_J*x_K-12*x_C^2*x_E*x_J*x_K-12*x_C*x_F^2*x_J*x_K+12*x_C^2*x_F*x_J*x_K+12*x_D*x_F^2*x_J*x_K-12*x_E*x_F^2*x_J*x_K-4*x_C*x_D*x_J*y_C^2+4*x_C*x_D*x_K*y_C^2+4*x_C*x_E*x_J*y_C^2-4*x_C*x_E*x_K*y_C^2-5*x_C*x_F*x_J*y_C^2+6*x_D*x_E*x_J*y_C^2+9*x_C*x_D*x_J*y_F^2+5*x_C*x_F*x_K*y_C^2-6*x_D*x_E*x_K*y_C^2+7*x_D*x_F*x_J*y_C^2-9*x_C*x_D*x_K*y_F^2-7*x_C*x_E*x_J*y_F^2-7*x_D*x_F*x_K*y_C^2-9*x_E*x_F*x_J*y_C^2+7*x_C*x_E*x_K*y_F^2+5*x_C*x_F*x_J*y_F^2-6*x_D*x_E*x_J*y_F^2+9*x_E*x_F*x_K*y_C^2-5*x_C*x_F*x_K*y_F^2+6*x_D*x_E*x_K*y_F^2-4*x_D*x_F*x_J*y_F^2+4*x_D*x_F*x_K*y_F^2+4*x_E*x_F*x_J*$

$y_F^2+4*x_D*x_J*x_K*y_C^2-4*x_E*x_F*x_K*y_F^2-4*x_E*x_J*x_K*y_C^2+4*x_C*x_J*x_K*y_F^2-4*x_F*x_J*x_K*y_C^2+4*x_D*x_J*x_K*y_F^2-4*x_E*x_J*x_K*y_F^2+4*x_C^2*x_J*y_C*y_D-4*x_C^2*x_J*y_C*y_E-4*x_C^2*x_K*y_C*y_D+5*x_C^2*x_J*y_C*y_F+4*x_C^2*x_K*y_C*y_E-5*x_C^2*x_J*y_D*y_F-5*x_C^2*x_K*y_C*y_F+2*x_D^2*x_J*y_C*y_F-5*x_F^2*x_J*y_C*y_D+5*x_C^2*x_J*y_E*y_F+5*x_C^2*x_K*y_D*y_F-2*x_D^2*x_K*y_C*y_F-2*x_E^2*x_J*y_C*y_F+5*x_F^2*x_J*y_C*y_E+5*x_F^2*x_K*y_C*y_D-5*x_C^2*x_K*y_E*y_F+2*x_E^2*x_K*y_C*y_F-5*x_F^2*x_J*y_C*y_F-5*x_F^2*x_K*y_C*y_E+4*x_F^2*x_J*y_D*y_F+5*x_F^2*x_K*y_C*y_F-4*x_F^2*x_J*y_E*y_F-4*x_F^2*x_K*y_D*y_F+4*x_F^2*x_K*y_E*y_F+3*x_J*y_C*y_D*y_F^2+3*x_J*y_C^2*y_D*y_F-3*x_J*y_C*y_E*y_F^2-3*x_J*y_C^2*y_E*y_F-3*x_K*y_C*y_D*y_F^2-3*x_K*y_C^2*y_D*y_F+3*x_K*y_C*y_E*y_F^2+3*x_K*y_C^2*y_E*y_F+2*3^{1/2}*x_C^2*x_D*x_J*y_C-4*3^{1/2}*x_C*x_E^2*x_J*y_C+2*3^{1/2}*x_C^2*x_D*x_J*y_D-2*3^{1/2}*x_C^2*x_D*x_K*y_C-2*3^{1/2}*x_C^2*x_E*x_J*y_C+4*3^{1/2}*x_C*x_E^2*x_K*y_C+4*3^{1/2}*x_C*x_F^2*x_J*y_C-2*3^{1/2}*x_C^2*x_D*x_J*y_E-2*3^{1/2}*x_C^2*x_D*x_K*y_D-4*3^{1/2}*x_C^2*x_E*x_J*y_D+2*3^{1/2}*x_C^2*x_E*x_K*y_C-3^{1/2}*x_C^2*x_F*x_J*y_C+6*3^{1/2}*x_C*x_D^2*x_J*y_F-3^{1/2}*x_C*x_F^2*x_J*y_D-4*3^{1/2}*x_C*x_F^2*x_K*y_C-3^{1/2}*x_D*x_F^2*x_J*y_C+3*3^{1/2}*x_C^2*x_D*x_J*y_F+2*3^{1/2}*x_C^2*x_D*x_K*y_E+4*3^{1/2}*x_C^2*x_E*x_J*y_E+4*3^{1/2}*x_C^2*x_E*x_K*y_D+3^{1/2}*x_C^2*x_F*x_J*y_D+3^{1/2}*x_C^2*x_F*x_K*y_C+2*3^{1/2}*x_D^2*x_F*x_J*y_C-6*3^{1/2}*x_C*x_D^2*x_K*y_F+2*3^{1/2}*x_C*x_E^2*x_J*y_F+3^{1/2}*x_C*x_F^2*x_J*y_E+3^{1/2}*x_C*x_F^2*x_K*y_D+4*3^{1/2}*x_D*x_F^2*x_J*y_D+3^{1/2}*x_D*x_F^2*x_K*y_C+3*3^{1/2}*x_E*x_F^2*x_J*y_C-3*3^{1/2}*x_C^2*x_D*x_K*y_F-3^{1/2}*x_C^2*x_E*x_J*y_F-4*3^{1/2}*x_C^2*x_E*x_K*y_E-3^{1/2}*x_C^2*x_F*x_J*y_E-3^{1/2}*x_C^2*x_F*x_K*y_D-2*3^{1/2}*x_D^2*x_F*x_K*y_C+6*3^{1/2}*x_E^2*x_F*x_J*y_C-2*3^{1/2}*x_C*x_E^2*x_K*y_F-3^{1/2}*x_C*x_F^2*x_J*y_F-3^{1/2}*x_C*x_F^2*x_K*y_E-4*3^{1/2}*x_D*x_F^2*x_J*y_E-4*3^{1/2}*x_D*x_F^2*x_K*y_D-2*3^{1/2}*x_E*x_F^2*x_J*y_D-3*3^{1/2}*x_E*x_F^2*x_K*y_C+3^{1/2}*x_C^2*x_E*x_K*y_F+4*3^{1/2}*x_C^2*x_F*x_J*y_F+3^{1/2}*x_C^2*x_F*x_K*y_E-6*3^{1/2}*x_E^2*x_F*x_K*y_C+3^{1/2}*x_C*x_F^2*x_K*y_F-2*3^{1/2}*x_D*x_F^2*x_J*y_F+4*3^{1/2}*x_D*x_F^2*x_K*y_E+2*3^{1/2}*x_E*x_F^2*x_J*y_E+2*3^{1/2}*x_E*x_F^2*x_K*y_D-4*3^{1/2}*x_C^2*x_F*x_K*y_F-4*3^{1/2}*x_D^2*x_F*x_J*y_F+2*3^{1/2}*x_D*x_F^2*x_K*y_F+2*3^{1/2}*x_E*x_F^2*x_J*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_E+4*3^{1/2}*x_D^2*x_F*x_K*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_F-4*3^{1/2}*x_C^2*x_J*x_K*y_D+4*3^{1/2}*x_C^2*x_J*x_K*y_E+4*3^{1/2}*x_C^2*x_J*x_K*y_F+4*3^{1/2}*x_F^2*x_J*x_K*y_C+4*3^{1/2}*x_F^2*x_J*x_K*y_D-4*3^{1/2}*x_F^2*x_J*x_K*y_E+2*3^{1/2}*x_C*x_J*y_C^2*y_D-2*3^{1/2}*x_C*x_J*y_C^2*y_E-2*3^{1/2}*x_C*x_K*y_C^2*y_D+2*3^{1/2}*x_D*x_J*y_C^2*y_D+4*3^{1/2}*x_C*x_J*y_C*y_F^2-3^{1/2}*x_C*x_J*y_C^2*y_F+2*3^{1/2}*x_C*x_K*y_C^2*y_E-2*3^{1/2}*x_D*x_J*y_C^2*y_E-2*3^{1/2}*x_D*x_K*y_C^2*y_D-3^{1/2}*x_C*x_J*y_D*y_F^2-4*3^{1/2}*x_C*x_K*y_C*y_F^2+3^{1/2}*x_C*x_K*y_C^2*y_F+3*3^{1/2}*x_D*x_J*y_C*y_F^2-3^{1/2}*x_D*x_J*y_C^2*y_F+2*3^{1/2}*x_D*x_K*y_C^2*y_E+3^{1/2}*x_F*x_J*y_C^2*y_D+3^{1/2}*x_C*x_J*y_E*y_F^2+3^{1/2}*x_C*x_K*y_D*y_F^2-3*3^{1/2}*x_D*x_K*y_C*y_F^2+3^{1/2}*x_D*x_K*y_C^2*y_F-3^{1/2}*x_E*x_J*y_C*y_F^2+3*3^{1/2}*x_E*x_J*y_C^2*y_F-3^{1/2}*x_F*x_J*y_C^2*y_E-3^{1/2}*x_F*x_K*y_C^2*y_D-3^{1/2}*x_C*x_K*y_E*y_F^2-2*3^{1/2}*x_E*x_J*y_D*y_F^2+3^{1/2}*x_E*x_K*y_C*y_F^2-3*3^{1/2}*x_E*x_K*y_C^2*y_F-3^{1/2}*x_F*x_J*y_C*y_F^2+4*3^{1/2}*x_F*x_J*y_C^2*y_F+3^{1/2}*x_F*x_K*y_C^2*y_E+2*3^{1/2}*x_E*x_J*y_E*y_F^2+2*3^{1/2}*x_E*x_K*y_D*y_F^2-2*3^{1/2}*x_F*x_J*y_D*y_F^2+3^{1/2}*x_F*x_K*y_C*y_F^2-4*3^{1/2}*x_F*x_K*y_C^2*y_F-2*3^{1/2}*x_E*x_K*y_E*y_F^2+2*3^{1/2}*x_F*x_J*y_E*y_F^2+2*3^{1/2}*x_F*x_K*y_D*y_F^2-4*3^{1/2}*x_J*x_K*y_C^2*y_D-4*3^{1/2}*x_J*x_K*y_C^2*y_E+4*3^{1/2}*x_J*x_K*y_C*y_F^2+4*3^{1/2}*x_J*x_K*y_C^2*y_F-4*3^{1/2}*x_J*x_K*y_D*y_F^2+4*3^{1/2}*x_J*x_K*y_E*y_F^2-4*3^{1/2}*x_C*x_D*x_J*y_D+4*3^{1/2}*x_C*x_D*x_J*y_E+4*3^{1/2}*x_C*x_D*x_K*y_D+8*3^{1/2}*x_C*x_E*x_J*y_D+2*3^{1/2}*x_C*x_F*x_J*y_C-4*3^{1/2}*x_D*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_J*y_F-4*3^{1/2}*x_C*x_D*x_K*y_E-8*3^{1/2}*x_C*x_E*x_J*y_E-8*3^{1/2}*x_C*x_E*x_K*y_D-2*3^{1/2}*x_C*x_F*x_J*y_D-2*3^{1/2}*x_C*x_F*x_K*y_C+4*3^{1/2}*x_D*x_E*x_K*y_C-4*3^{1/2}*x_D*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D*x_K*y_F-2*3^{1/2}*x_C*x_E*x_J*y_F+8*3^{1/2}*x_C*x_E*x_K*y_E+2*3^{1/2}*x_C*x_F*x_J*y_E+2*3^{1/2}*x_C*x_F*x_K*y_D+6*3^{1/2}*x_D*x_F*x_J*y_D+4*3^{1/2}*x_D*x_F*x_K*y_C+4*3^{1/2}*x_E*x_F*x_J*y_C+2*3^{1/2}*x_C*x_E*x_K*y_F-8*3^{1/2}*x_C*x_F*x_J*y_F-2*3^{1/2}*x_C*x_F*x_K*y_E+8*$

$3^{1/2}*x_D*x_E*x_J*y_F-6*3^{1/2}*x_D*x_F*x_J*y_E-6*3^{1/2}*x_D*x_F*x_K*y_D-6*3^{1/2}*x_E*x_F*x_J*y_D-4*3^{1/2}*x_E*x_F*x_K*y_C+8*3^{1/2}*x_C*x_F*x_K*y_F-8*3^{1/2}*x_D*x_E*x_K*y_F-4*3^{1/2}*x_D*x_F*x_J*y_F+6*3^{1/2}*x_D*x_F*x_K*y_E+6*3^{1/2}*x_E*x_F*x_J*y_E+6*3^{1/2}*x_E*x_F*x_K*y_D+4*3^{1/2}*x_D*x_F*x_K*y_F+4*3^{1/2}*x_E*x_F*x_J*y_F-6*3^{1/2}*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_J*x_K*y_D-8*3^{1/2}*x_D*x_J*x_K*y_C-4*3^{1/2}*x_E*x_F*x_K*y_F-8*3^{1/2}*x_C*x_J*x_K*y_E+8*3^{1/2}*x_E*x_J*x_K*y_C-8*3^{1/2}*x_C*x_J*x_K*y_F-8*3^{1/2}*x_D*x_J*x_K*y_F+8*3^{1/2}*x_E*x_J*x_K*y_F-4*3^{1/2}*x_J*y_C*y_D*y_F+4*3^{1/2}*x_J*y_C*y_E*y_F+4*3^{1/2}*x_K*y_C*y_D*y_F-4*3^{1/2}*x_K*y_C*y_E*y_F-24*x_C*x_D*x_F*x_J*x_K+24*x_C*x_E*x_F*x_J*x_K+8*x_C*x_D*x_J*y_C*y_D-8*x_C*x_D*x_J*y_C*y_E-8*x_C*x_D*x_K*y_C*y_D-4*x_C*x_E*x_J*y_C*y_D+8*x_C*x_D*x_J*y_C*y_F+8*x_C*x_D*x_K*y_C*y_E+4*x_C*x_E*x_J*y_C*y_E+4*x_C*x_E*x_K*y_C*y_D-4*x_C*x_F*x_J*y_C*y_D+2*x_C*x_D*x_J*y_D*y_F-8*x_C*x_D*x_K*y_C*y_F-4*x_C*x_E*x_K*y_C*y_E+4*x_C*x_F*x_J*y_C*y_E+4*x_C*x_F*x_K*y_C*y_D-10*x_D*x_F*x_J*y_C*y_D-2*x_C*x_D*x_J*y_E*y_F-2*x_C*x_D*x_K*y_D*y_F-10*x_C*x_E*x_J*y_D*y_F-4*x_C*x_F*x_K*y_C*y_E+10*x_D*x_F*x_J*y_C*y_E+10*x_D*x_F*x_K*y_C*y_D+2*x_E*x_F*x_J*y_C*y_D+2*x_C*x_D*x_K*y_E*y_F+10*x_C*x_E*x_J*y_E*y_F+10*x_C*x_E*x_K*y_D*y_F-4*x_C*x_F*x_J*y_D*y_F-10*x_D*x_F*x_K*y_C*y_E-2*x_E*x_F*x_J*y_C*y_E-2*x_E*x_F*x_K*y_C*y_D-10*x_C*x_E*x_K*y_E*y_F+4*x_C*x_F*x_J*y_E*y_F+4*x_C*x_F*x_K*y_D*y_F-4*x_D*x_F*x_J*y_D*y_F-8*x_E*x_F*x_J*y_C*y_F+2*x_E*x_F*x_K*y_C*y_E-4*x_C*x_F*x_K*y_E*y_F+8*x_C*x_J*x_K*y_C*y_D+4*x_D*x_F*x_J*y_E*y_F+4*x_D*x_F*x_K*y_D*y_F+8*x_E*x_F*x_J*y_D*y_F+8*x_E*x_F*x_K*y_C*y_F-8*x_C*x_J*x_K*y_C*y_E-4*x_D*x_F*x_K*y_E*y_F-8*x_E*x_F*x_J*y_E*y_F-8*x_E*x_F*x_K*y_D*y_F+16*x_C*x_J*x_K*y_C*y_F+8*x_E*x_F*x_K*y_E*y_F-16*x_C*x_J*x_K*y_D*y_F+8*x_D*x_J*x_K*y_C*y_F-16*x_F*x_J*x_K*y_C*y_D+16*x_C*x_J*x_K*y_E*y_F-8*x_E*x_J*x_K*y_C*y_F+16*x_F*x_J*x_K*y_C*y_E-16*x_F*x_J*x_K*y_C*y_F+8*x_F*x_J*x_K*y_D*y_F-8*x_F*x_J*x_K*y_E*y_F+4*3^{1/2}*x_C*x_D*x_E*x_J*y_C-4*3^{1/2}*x_C*x_D*x_E*x_K*y_C-6*3^{1/2}*x_C*x_D*x_F*x_J*y_D-8*3^{1/2}*x_C*x_D*x_E*x_J*y_F+6*3^{1/2}*x_C*x_D*x_F*x_J*y_E+6*3^{1/2}*x_C*x_D*x_F*x_K*y_D+6*3^{1/2}*x_C*x_E*x_F*x_J*y_D-8*3^{1/2}*x_D*x_E*x_F*x_J*y_C+8*3^{1/2}*x_C*x_D*x_E*x_K*y_F-6*3^{1/2}*x_C*x_D*x_F*x_K*y_E-6*3^{1/2}*x_C*x_E*x_F*x_J*y_E-6*3^{1/2}*x_C*x_E*x_F*x_K*y_D+8*3^{1/2}*x_D*x_E*x_F*x_K*y_C+6*3^{1/2}*x_C*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_D*x_J*x_K*y_C+4*3^{1/2}*x_D*x_E*x_F*x_J*y_F-8*3^{1/2}*x_C*x_E*x_J*x_K*y_C-4*3^{1/2}*x_D*x_E*x_F*x_K*y_F+8*3^{1/2}*x_C*x_D*x_J*x_K*y_F-8*3^{1/2}*x_D*x_F*x_J*x_K*y_C-8*3^{1/2}*x_C*x_E*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_C-8*3^{1/2}*x_D*x_F*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_F+4*3^{1/2}*x_C*x_J*y_C*y_D*y_F-4*3^{1/2}*x_C*x_J*y_C*y_E*y_F-4*3^{1/2}*x_C*x_K*y_C*y_D*y_F+2*3^{1/2}*x_D*x_J*y_C*y_D*y_F+4*3^{1/2}*x_C*x_K*y_C*y_E*y_F-2*3^{1/2}*x_D*x_J*y_C*y_E*y_F-2*3^{1/2}*x_D*x_K*y_C*y_D*y_F-2*3^{1/2}*x_E*x_J*y_C*y_D*y_F+2*3^{1/2}*x_D*x_K*y_C*y_E*y_F+2*3^{1/2}*x_E*x_J*y_C*y_E*y_F+2*3^{1/2}*x_E*x_K*y_C*y_D*y_F-4*3^{1/2}*x_F*x_J*y_C*y_D*y_F-2*3^{1/2}*x_E*x_K*y_C*y_E*y_F+4*3^{1/2}*x_F*x_J*y_C*y_E*y_F+4*3^{1/2}*x_F*x_K*y_C*y_D*y_F-4*3^{1/2}*x_F*x_K*y_C*y_E*y_F)/(2*(3*x_J-x_K)*(y_C+y_F+3^{1/2}*x_C-3^{1/2}*x_F-3^{1/2})*(y_D-y_E-y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F-x_C*y_D+x_D*y_C+x_C*y_E-x_E*y_C+x_C*y_F-x_F*y_C+x_D*y_F-x_F*y_D-x_E*y_F+x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F)), (3*x_F*x_J-3*x_F*x_K+3*x_F^2*x_J-3*x_F^2*x_K-2*x_J*y_D^2-4*x_J*y_E^2+2*x_K*y_D^2+x_J*y_F^2+4*x_K*y_E^2-x_K*y_F^2-3*x_C*x_F^2*x_J+3*x_C^2*x_F*x_J+3*x_C*x_F^2*x_K-3*x_C^2*x_F*x_K+2*x_C*x_J*y_D^2+2*x_D*x_J*y_C^2+4*x_C*x_J*y_E^2-2*x_C*x_K*y_D^2-2*x_D*x_K*y_C^2-2*x_E*x_J*y_C^2-x_C*x_J*y_F^2-4*x_C*x_K*y_E^2+2*x_E*x_K*y_C^2+x_F*x_J*y_C^2+x_C*x_K*y_F^2+2*x_D*x_J*y_F^2-4*x_F*x_J*y_D^2-x_F*x_K*y_C^2-2*x_D*x_K*y_F^2-2*x_E*x_J*y_F^2-2*x_F*x_J*y_E^2+4*x_F*x_K*y_D^2+2*x_E*x_K*y_F^2+2*x_F*x_K*y_E^2-2*3^{1/2}*x_J*y_D+2*3^{1/2}*x_J*y_E+2*3^{1/2}*x_K*y_D-3^{1/2}*x_J*y_F-2*3^{1/2}*x_K*y_E+3^{1/2}*x_K*y_F-6*x_C*x_F*x_J+6*x_C*x_F*x_K+3*x_D*x_F*x_J-3*x_D*x_F*x_K-3*x_E*$

$x_F*x_J+3*x_E*x_F*x_K+2*x_J*y_C*y_D-2*x_J*y_C*y_E-2*x_K*y_C*y_D-2*x_J*y_C*y_F+6*x_J*y_D*y_E+2*x_K*y_C*y_E+x_J*y_D*y_F+2*x_K*y_C*y_F-6*x_K*y_D*y_E-3*x_J*y_E*y_F-x_K*y_D*y_F+3*x_K*y_E*y_F+4*x_K*y_D*y_J-4*x_K*y_E*y_J-4*x_K*y_F*y_J+4*3^{1/2}*x_C*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C-4*3^{1/2}*x_C*x_J*y_E-4*3^{1/2}*x_C*x_K*y_D-2*3^{1/2}*x_D*x_J*y_D+2*3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C+2*3^{1/2}*x_C*x_J*y_F+4*3^{1/2}*x_C*x_K*y_E+2*3^{1/2}*x_D*x_K*y_D+2*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C-2*3^{1/2}*x_F*x_J*y_C-2*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F-2*3^{1/2}*x_E*x_K*y_D-3^{1/2}*x_F*x_J*y_D+2*3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3^{1/2}*x_E*x_J*y_F-3^{1/2}*x_F*x_J*y_E+3^{1/2}*x_F*x_K*y_D-3^{1/2}*x_E*x_K*y_F-2*3^{1/2}*x_F*x_J*y_F+3^{1/2}*x_F*x_K*y_E+2*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_D*x_K*y_J+4*3^{1/2}*x_E*x_K*y_J-4*3^{1/2}*x_F*x_K*y_J-3*x_C*x_D*x_F*x_J+3*x_C*x_D*x_F*x_K+3*x_C*x_E*x_F*x_J-3*x_C*x_E*x_F*x_K-2*x_C*x_J*y_C*y_D+2*x_C*x_J*y_C*y_E+2*x_C*x_K*y_C*y_D-2*x_D*x_J*y_C*y_D+2*x_C*x_J*y_C*y_F-6*x_C*x_J*y_D*y_E-2*x_C*x_K*y_C*y_E+4*x_D*x_J*y_C*y_E+2*x_D*x_K*y_C*y_D+2*x_E*x_J*y_C*y_D-x_C*x_J*y_D*y_F-2*x_C*x_K*y_C*y_F+6*x_C*x_K*y_D*y_E+x_D*x_J*y_C*y_F-4*x_D*x_K*y_C*y_E-4*x_E*x_J*y_C*y_E-2*x_E*x_K*y_C*y_D-3*x_F*x_J*y_C*y_D+3*x_C*x_J*y_E*y_F+x_C*x_K*y_D*y_F+4*x_D*x_J*y_D*y_F-x_D*x_K*y_C*y_F-x_E*x_J*y_C*y_F+4*x_E*x_K*y_C*y_E+x_F*x_J*y_C*y_E+3*x_F*x_K*y_C*y_D-3*x_C*x_K*y_E*y_F-2*x_D*x_J*y_E*y_F-4*x_D*x_K*y_D*y_F-4*x_E*x_J*y_D*y_F+x_E*x_K*y_C*y_F-2*x_F*x_J*y_C*y_F+6*x_F*x_J*y_D*y_E-x_F*x_K*y_C*y_E+2*x_D*x_K*y_E*y_F+2*x_E*x_J*y_E*y_F+4*x_E*x_K*y_D*y_F-2*x_F*x_J*y_D*y_F+2*x_F*x_K*y_C*y_F-6*x_F*x_K*y_D*y_E-2*x_E*x_K*y_E*y_F+2*x_F*x_J*y_E*y_F+2*x_F*x_K*y_D*y_F-4*x_C*x_K*y_D*y_J+4*x_D*x_K*y_C*y_J-2*x_F*x_K*y_E*y_F+4*x_C*x_K*y_E*y_J-4*x_E*x_K*y_C*y_J+4*x_C*x_K*y_F*y_J-4*x_F*x_K*y_C*y_J+4*x_D*x_K*y_F*y_J-4*x_F*x_K*y_D*y_J-4*x_E*x_K*y_F*y_J+4*x_F*x_K*y_E*y_J-2*3^{1/2}*x_C^2*x_J*y_D+2*3^{1/2}*x_C^2*x_J*y_E+2*3^{1/2}*x_C^2*x_K*y_D-3^{1/2}*x_C^2*x_J*y_F-2*3^{1/2}*x_C^2*x_K*y_E-3^{1/2}*x_F^2*x_J*y_C+3^{1/2}*x_C^2*x_K*y_F+2*3^{1/2}*x_F^2*x_J*y_D+3^{1/2}*x_F^2*x_K*y_C-2*3^{1/2}*x_F^2*x_J*y_E-2*3^{1/2}*x_F^2*x_K*y_D+2*3^{1/2}*x_F^2*x_K*y_E+2*3^{1/2}*x_J*y_C*y_D^2-2*3^{1/2}*x_K*y_C*y_D^2+3^{1/2}*x_J*y_C*y_F^2+3^{1/2}*x_J*y_C^2*y_F-3^{1/2}*x_K*y_C*y_F^2-3^{1/2}*x_K*y_C^2*y_F+2*3^{1/2}*x_J*y_E^2*y_F-2*3^{1/2}*x_K*y_E^2*y_F+2*3^{1/2}*x_C*x_D*x_J*y_C+2*3^{1/2}*x_C*x_D*x_J*y_D-2*3^{1/2}*x_C*x_D*x_K*y_C-2*3^{1/2}*x_C*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_K*y_D-2*3^{1/2}*x_C*x_E*x_J*y_D+2*3^{1/2}*x_C*x_E*x_K*y_C+2*3^{1/2}*x_C*x_F*x_J*y_C+3^{1/2}*x_C*x_D*x_J*y_F+2*3^{1/2}*x_C*x_E*x_K*y_D+3^{1/2}*x_C*x_F*x_J*y_D-2*3^{1/2}*x_C*x_F*x_K*y_C-3^{1/2}*x_D*x_F*x_J*y_C-3^{1/2}*x_C*x_D*x_K*y_F-3^{1/2}*x_C*x_E*x_J*y_F+3^{1/2}*x_C*x_F*x_J*y_E-3^{1/2}*x_C*x_F*x_K*y_D+3^{1/2}*x_D*x_F*x_K*y_C+3^{1/2}*x_E*x_F*x_J*y_C+3^{1/2}*x_C*x_E*x_K*y_F+2*3^{1/2}*x_C*x_F*x_J*y_F-3^{1/2}*x_C*x_F*x_K*y_E-2*3^{1/2}*x_D*x_F*x_J*y_E-3^{1/2}*x_E*x_F*x_K*y_C-2*3^{1/2}*x_C*x_F*x_K*y_F-2*3^{1/2}*x_D*x_F*x_J*y_F+2*3^{1/2}*x_D*x_F*x_K*y_E+2*3^{1/2}*x_E*x_F*x_J*y_E+2*3^{1/2}*x_D*x_F*x_K*y_F+2*3^{1/2}*x_E*x_F*x_J*y_F-2*3^{1/2}*x_E*x_F*x_K*y_E+4*3^{1/2}*x_C*x_D*x_K*y_J-2*3^{1/2}*x_E*x_F*x_K*y_F-4*3^{1/2}*x_C*x_E*x_K*y_J+4*3^{1/2}*x_C*x_F*x_K*y_J-4*3^{1/2}*x_D*x_F*x_K*y_J+4*3^{1/2}*x_E*x_F*x_K*y_J-2*3^{1/2}*x_J*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_D*y_F+2*3^{1/2}*x_K*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_E*y_F-3^{1/2}*x_K*y_C*y_D*y_F-2*3^{1/2}*x_J*y_D*y_E*y_F-3^{1/2}*x_K*y_C*y_E*y_F+2*3^{1/2}*x_K*y_D*y_E*y_F+4*3^{1/2}*x_K*y_C*y_D*y_J-4*3^{1/2}*x_K*y_C*y_E*y_J+4*3^{1/2}*x_K*y_C*y_F*y_J-4*3^{1/2}*x_K*y_D*y_F*y_J+4*3^{1/2}*x_K*y_E*y_F*y_J)/(2*(3*x_J-x_K)*(y_D-y_E-y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F-x_C*y_D+x_D*y_C+x_C*y_E-x_E*y_C+x_C*y_F-x_F*y_C+x_D*y_F-x_F*y_D-x_E*y_F+x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F))).$

□

Theorem 2.6. *The resulting triangles in theorems 2.2 and 2.3 are in perspective.*

Proof. Case 1: the mounted triangles are external.
The line between the W coordinates in theorems 2.2 and 2.3 is given by the equation
$y = (((x_K - x_J) * y_F + 2 * (x_K - x_J) * y_C + (x_J - x_K) * y_C - 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_K - 3^{1/2} * (x_E - x_D) * x_K + 3^{1/2} * (x_F - x_E + x_D - x_C + 1) * x_J + 3^{1/2} * (x_E - x_D) * x_J) * (2 * (x_K - 3 * x_J) * x - 3^{1/2} * (x_K - x_J) * y_E + 3^{1/2} * (x_K - x_J) * y_D - (-4 * x_J + 2 * (x_F + x_C) + x_E + x_D) * x_K - (-2 * (x_F + x_C) - x_E - x_D) * x_J))/(2 * (x_K - 3 * x_J) * (3^{1/2} * (x_K - x_J) * y_F - 3^{1/2} * (x_K - x_J) * y_C + (4 * x_J - x_F - x_E - x_D - x_C - 1) * x_K + (-4 * x_J + 2 * (x_F + x_C) + x_E + x_D) * x_K + (-2 * (x_F + x_C) - x_E - x_D) * x_J + (x_F + x_E + x_D + x_C + 1) * x_J)) + (-4 * x_K * y_J + 2 * (x_K - x_J) * y_F - (x_J - x_K) * y_E - (x_J - x_K) * y_D + 2 * (x_K - x_J) * y_C - 3^{1/2} * (x_E - x_D) * x_K + 3^{1/2} * (x_E - x_D) * x_J)/(2 * (x_K - 3 * x_J))$.
The line between C_1 in theorem 2.2 and G_1 in theorem 2.3 is given by the equation
$y = (((2 * x_K * y_J + (x_J - x_K) * y_F + (x_J - x_K) * y_D)/(x_K - 3 * x_J) - (4 * x_K * y_J + (x_J - x_K) * y_F + (2 * x_J - 2 * x_K) * y_E - 3^{1/2} * x_F * x_K + 3^{1/2} * x_F * x_J)/(2 * x_K - 6 * x_J)) * (x + (3^{1/2} * (x_K - x_J) * y_F + (4 * x_J - x_F - 2 * x_E - 2) * x_K + (x_F + 2 * x_E + 2) * x_J)/(2 * (x_K - 3 * x_J))))/(((2 * x_J - x_F - x_D - 1) * x_K + (x_F + x_D + 1) * x_J)/(x_K - 3 * x_J) - (3^{1/2} * (x_K - x_J) * y_F + (4 * x_J - x_F - 2 * x_E - 2) * x_K + (x_F + 2 * x_E + 2) * x_J)/(2 * (x_K - 3 * x_J))) - (4 * x_K * y_J + (x_J - x_K) * y_F + (2 * x_J - 2 * x_K) * y_E - 3^{1/2} * x_F * x_K + 3^{1/2} * x_F * x_J)/(2 * x_K - 6 * x_J)$.
The line between G_1 in theorem 2.2 and C_1 in theorem 2.3 is given by the equation
$y = (((2 * x_K * y_J + (x_J - x_K) * y_E + (x_J - x_K) * y_C)/(x_K - 3 * x_J) - (4 * x_K * y_J - 2 * (x_K - x_J) * y_D + (x_J - x_K) * y_C + 3^{1/2} * (x_C - 1) * x_K - 3^{1/2} * (x_C - 1) * x_J)/(2 * (x_K - 3 * x_J))) * (x - (3^{1/2} * (x_K - x_J) * y_C - (4 * x_J - 2 * x_D - x_C - 1) * x_K + (-2 * x_D - x_C - 1) * x_J)/(2 * (x_K - 3 * x_J))))/((3^{1/2} * (x_K - x_J) * y_C - (4 * x_J - 2 * x_D - x_C - 1) * x_K + (-2 * x_D - x_C - 1) * x_J)/(2 * (x_K - 3 * x_J)) + ((2 * x_J - x_E - x_C) * x_K + (x_E + x_C) * x_J)/(x_K - 3 * x_J)) - (4 * x_K * y_J - 2 * (x_K - x_J) * y_D + (x_J - x_K) * y_C + 3^{1/2} * (x_C - 1) * x_K - 3^{1/2} * (x_C - 1) * x_J)/(2 * (x_K - 3 * x_J))$.
One can then verify that the following point lies on all three lines, whose coordinates are given by
$((3 * x_F * x_J - 3 * x_F * x_K - 6 * x_E^2 * x_J + 6 * x_E^2 * x_K + 6 * x_F^2 * x_J + 3 * x_F^3 * x_J - 6 * x_F^2 * x_K - 3 * x_F^3 * x_K + 4 * x_J * y_F^2 - 4 * x_K * y_F^2 - 3^{1/2} * x_J * y_F^3 + 3^{1/2} * x_K * y_F^3 - 12 * x_C^2 * x_D * x_J + 6 * x_C^3 * x_D * x_J + 12 * x_C * x_E^2 * x_J + 12 * x_C^2 * x_D * x_K + 12 * x_C^2 * x_E * x_J - 6 * x_C^3 * x_D * x_K - 6 * x_C^3 * x_E * x_J - 12 * x_C * x_E^2 * x_K - 6 * x_C * x_F^2 * x_J - 12 * x_C^2 * x_E * x_K - 3 * x_C^2 * x_F * x_J - 3 * x_C * x_F^3 * x_J + 6 * x_C^3 * x_E * x_K + 3 * x_C^3 * x_F * x_J + 6 * x_C * x_F^2 * x_K + 15 * x_D * x_F^2 * x_J + 3 * x_C^2 * x_F * x_K + 6 * x_D^2 * x_F * x_J + 3 * x_C * x_F^3 * x_K + 6 * x_D * x_F^3 * x_J - 3 * x_C^3 * x_F * x_K - 15 * x_D * x_F^2 * x_K - 9 * x_E * x_F^2 * x_J - 6 * x_D^2 * x_F * x_K - 6 * x_E^2 * x_F * x_J - 6 * x_D * x_F^3 * x_K - 6 * x_E * x_F^3 * x_J + 9 * x_E * x_F^2 * x_K + 6 * x_E^2 * x_F * x_K + 6 * x_E * x_F^3 * x_K + 12 * x_F^2 * x_J * x_K - 4 * x_D * x_J * y_C^2 + 4 * x_D * x_K * y_C^2 + 4 * x_E * x_J * y_C^2 - 10 * x_C * x_J * y_F^2 - 4 * x_E * x_K * y_C^2 - 5 * x_F * x_J * y_C^2 + 10 * x_C * x_K * y_F^2 + 7 * x_D * x_J * y_F^2 + 5 * x_F * x_K * y_C^2 - 7 * x_D * x_K * y_F^2 - 9 * x_E * x_J * y_F^2 + 9 * x_E * x_K * y_F^2 + 3 * x_F * x_J * y_F^2 - 3 * x_F * x_K * y_F^2 - 4 * x_J * x_K * y_F^2 - 3 * x_J * y_C * y_F^3 + 3 * x_J * y_C^3 * y_F + 3 * x_K * y_C * y_F^3 - 3 * x_K * y_C^3 * y_F - 6 * x_C^2 * x_E^2 * x_J + 6 * x_C^2 * x_E^2 * x_K + 6 * x_D^2 * x_F^2 * x_J - 6 * x_D^2 * x_F^2 * x_K + 4 * x_D^2 * x_J * y_C^2 - 4 * x_D^2 * x_K * y_C^2 + 2 * x_E^2 * x_J * y_C^2 + 6 * x_C^2 * x_J * y_F^2 - 2 * x_E^2 * x_K * y_C^2 - 6 * x_F^2 * x_J * y_C^2 - 6 * x_C^2 * x_K * y_F^2 - 2 * x_D^2 * x_J * y_F^2 + 6 * x_F^2 * x_K * y_C^2 + 2 * x_D^2 * x_K * y_F^2 - 4 * x_E^2 * x_J * y_F^2 + 4 * x_E^2 * x_K * y_F^2 - 2 * 3^{1/2} * x_J * y_D + 2 * 3^{1/2} * x_J * y_E + 2 * 3^{1/2} * x_K * y_D - 3^{1/2} * x_J * y_F - 2 * 3^{1/2} * x_K * y_E + 3^{1/2} * x_K * y_F + 6 * x_C * x_D * x_J - 6 * x_C * x_D * x_K - 6 * x_C * x_E * x_J + 6 * x_C * x_E * x_K - 3 * x_C * x_F * x_J + 6 * x_D * x_E * x_J + 3 * x_C * x_F * x_K - 6 * x_D * x_E * x_K + 9 * x_D * x_F * x_J - 9 * x_D * x_F * x_K - 3 * x_E * x_F * x_J + 3 * x_E * x_F * x_K + 12 * x_D * x_J * x_K - 12 * x_E * x_J * x_K + 12 * x_F * x_J * x_K - 4 * x_J * y_C * y_D + 4 * x_J * y_C * y_E + 4 * x_K * y_C * y_D - 5 * x_J * y_C * y_F - 4 * x_K * y_C * y_E + 5 * x_J * y_D * y_F + 5 * x_K * y_C * y_F - 5 * x_J * y_E * y_F - 5 * x_K * y_D * y_F + 5 * x_K * y_E * y_F + 4 * 3^{1/2} * x_C * x_J * y_D - 2 * 3^{1/2} * x_D * x_J * y_C - 4 * 3^{1/2} * x_C * x_J * y_E - 4 * 3^{1/2} * x_C * x_K * y_D - 4 * 3^{1/2} * x_D * x_J * y_D + 2 *$

$3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C+5*3^{1/2}*x_C*x_J*y_F+4*3^{1/2}*x_C*x_K*y_E+4*3^{1/2}*x_D*x_J*y_E+4*3^{1/2}*x_D*x_K*y_D+2*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C+3^{1/2}*x_F*x_J*y_C-5*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F-4*3^{1/2}*x_D*x_K*y_E-2*3^{1/2}*x_E*x_J*y_E-2*3^{1/2}*x_E*x_K*y_D-3*3^{1/2}*x_F*x_J*y_D-3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3*3^{1/2}*x_E*x_J*y_F+2*3^{1/2}*x_E*x_K*y_E+3*3^{1/2}*x_F*x_J*y_E+3*3^{1/2}*x_F*x_K*y_D-3*3^{1/2}*x_E*x_K*y_F-2*3^{1/2}*x_F*x_J*y_F-3*3^{1/2}*x_F*x_K*y_E+2*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_J*x_K*y_D+4*3^{1/2}*x_J*x_K*y_E+4*3^{1/2}*x_J*x_K*y_F-12*x_C*x_D*x_E*x_J+12*x_C*x_D*x_E*x_K-6*x_C*x_D*x_F*x_J+6*x_C*x_D*x_F*x_K-6*x_C*x_E*x_F*x_J+6*x_C*x_E*x_F*x_K-24*x_C*x_D*x_J*x_K+24*x_C*x_E*x_J*x_K-24*x_C*x_F*x_J*x_K+24*x_D*x_F*x_J*x_K-24*x_E*x_F*x_J*x_K+4*x_C*x_J*y_C*y_D-4*x_C*x_J*y_C*y_E-4*x_C*x_K*y_C*y_D+4*x_D*x_J*y_C*y_D+2*x_C*x_J*y_C*y_F+4*x_C*x_K*y_C*y_E-4*x_D*x_J*y_C*y_E-4*x_D*x_K*y_C*y_D-8*x_E*x_J*y_C*y_D-2*x_C*x_J*y_D*y_F-2*x_C*x_K*y_C*y_F+4*x_D*x_K*y_C*y_E+8*x_E*x_J*y_C*y_E+8*x_E*x_K*y_C*y_D-8*x_F*x_J*y_C*y_D+2*x_C*x_J*y_E*y_F+2*x_C*x_K*y_D*y_F+10*x_D*x_J*y_D*y_F-8*x_E*x_J*y_C*y_F-8*x_E*x_K*y_C*y_E+8*x_F*x_J*y_C*y_E+8*x_F*x_K*y_C*y_D-2*x_C*x_K*y_E*y_F-10*x_D*x_J*y_E*y_F-10*x_D*x_K*y_D*y_F-2*x_E*x_J*y_D*y_F+8*x_E*x_K*y_C*y_F-8*x_F*x_J*y_C*y_F-8*x_F*x_K*y_C*y_E+10*x_D*x_K*y_E*y_F+2*x_E*x_J*y_E*y_F+2*x_E*x_K*y_D*y_F+4*x_F*x_J*y_D*y_F+8*x_F*x_K*y_C*y_F-2*x_E*x_K*y_E*y_F-4*x_F*x_J*y_E*y_F-4*x_F*x_K*y_D*y_F+4*x_F*x_K*y_E*y_F-8*x_J*x_K*y_C*y_D+8*x_J*x_K*y_C*y_E-16*x_J*x_K*y_C*y_F+16*x_J*x_K*y_D*y_F-16*x_J*x_K*y_E*y_F-2*3^{1/2}*x_C^2*x_J*y_D-4*3^{1/2}*x_D^2*x_J*y_C+2*3^{1/2}*x_D*x_J*y_C^3+2*3^{1/2}*x_C^2*x_J*y_E+2*3^{1/2}*x_C^2*x_K*y_D+4*3^{1/2}*x_D^2*x_K*y_C-2*3^{1/2}*x_D*x_K*y_C^3-2*3^{1/2}*x_E*x_J*y_C^3-7*3^{1/2}*x_C^2*x_J*y_F-2*3^{1/2}*x_C^2*x_K*y_E+4*3^{1/2}*x_F^2*x_J*y_C+3^{1/2}*x_C*x_J*y_F^3+2*3^{1/2}*x_E*x_K*y_C^3+3^{1/2}*x_F*x_J*y_C^3+3*3^{1/2}*x_C^3*x_J*y_F+3*3^{1/2}*x_F^3*x_J*y_C+7*3^{1/2}*x_C^2*x_K*y_F+2*3^{1/2}*x_D^2*x_J*y_F-3^{1/2}*x_F^2*x_J*y_D-4*3^{1/2}*x_F^2*x_K*y_C-3^{1/2}*x_C*x_K*y_F^3-2*3^{1/2}*x_D*x_J*y_F^3-3^{1/2}*x_F*x_K*y_C^3-3*3^{1/2}*x_C^3*x_K*y_F-3*3^{1/2}*x_F^3*x_K*y_C-2*3^{1/2}*x_D^2*x_K*y_F+6*3^{1/2}*x_E^2*x_J*y_F+3^{1/2}*x_F^2*x_J*y_E+3^{1/2}*x_F^2*x_K*y_D+2*3^{1/2}*x_D*x_K*y_F^3+2*3^{1/2}*x_E*x_J*y_F^3-6*3^{1/2}*x_E^2*x_K*y_F-3^{1/2}*x_F^2*x_J*y_F-3^{1/2}*x_F^2*x_K*y_E-2*3^{1/2}*x_E*x_K*y_F^3+3^{1/2}*x_F^2*x_K*y_F+2*3^{1/2}*x_J*y_C^2*y_D-2*3^{1/2}*x_J*y_C^2*y_E-2*3^{1/2}*x_K*y_C^2*y_D+4*3^{1/2}*x_J*y_C*y_F^2-3^{1/2}*x_J*y_C^2*y_F+2*3^{1/2}*x_K*y_C^2*y_E-3^{1/2}*x_J*y_D*y_F^2-4*3^{1/2}*x_K*y_C*y_F^2+3^{1/2}*x_K*y_C^2*y_F+3^{1/2}*x_J*y_E*y_F^2+3^{1/2}*x_K*y_D*y_F^2-3^{1/2}*x_K*y_E*y_F^2+6*x_C^2*x_D*x_E*x_J-9*x_C*x_D*x_F^2*x_J-6*x_C*x_D^2*x_F*x_J-6*x_C^2*x_D*x_E*x_K-3*x_C^2*x_D*x_F*x_J+9*x_C*x_D*x_F^2*x_K+3*x_C*x_E*x_F^2*x_J+6*x_C*x_D^2*x_F*x_K+6*x_C*x_E^2*x_F*x_J+3*x_C^2*x_D*x_F*x_K+9*x_C^2*x_E*x_F*x_J-3*x_C*x_E*x_F^2*x_K-6*x_C*x_E^2*x_F*x_K-6*x_D*x_E*x_F^2*x_J-9*x_C^2*x_E*x_F*x_K+6*x_D*x_E*x_F^2*x_K+12*x_C^2*x_D*x_J*x_K-12*x_C^2*x_E*x_J*x_K-12*x_C*x_F^2*x_J*x_K+12*x_C^2*x_F*x_J*x_K+12*x_D*x_F^2*x_J*x_K-12*x_E*x_F^2*x_J*x_K+6*x_C*x_D*x_J*y_C^2-6*x_C*x_D*x_K*y_C^2-6*x_C*x_E*x_J*y_C^2+6*x_C*x_E*x_K*y_C^2+3*x_C*x_F*x_J*y_C^2-6*x_D*x_E*x_J*y_C^2-5*x_C*x_D*x_J*y_F^2-3*x_C*x_F*x_K*y_C^2+6*x_D*x_E*x_K*y_C^2-7*x_D*x_F*x_J*y_C^2+5*x_C*x_D*x_K*y_F^2+7*x_C*x_E*x_J*y_F^2+7*x_D*x_F*x_K*y_C^2+5*x_E*x_F*x_J*y_C^2-7*x_C*x_E*x_K*y_F^2-3*x_C*x_F*x_J*y_F^2+6*x_D*x_E*x_J*y_F^2-5*x_E*x_F*x_K*y_C^2+3*x_C*x_F*x_K*y_F^2-6*x_D*x_E*x_K*y_F^2+6*x_D*x_F*x_J*y_F^2-6*x_D*x_F*x_K*y_F^2-6*x_E*x_F*x_J*y_F^2+4*x_D*x_J*x_K*y_C^2+6*x_E*x_F*x_K*y_F^2-4*x_E*x_J*x_K*y_C^2+4*x_C*x_J*x_K*y_F^2-4*x_F*x_J*x_K*y_C^2+4*x_D*x_J*x_K*y_F^2-4*x_E*x_J*x_K*y_F^2+3*x_C^2*x_J*y_C*y_F-3*x_C^2*x_J*y_D*y_F-3*x_C^2*x_K*y_C*y_F+2*x_D^2*x_J*y_C*y_F-3*x_F^2*x_J*y_C*y_D+3*x_C^2*x_J*y_E*y_F+3*x_C^2*x_K*y_D*y_F-2*x_D^2*x_K*y_C*y_F-2*x_E^2*x_J*y_C*y_F+3*x_F^2*x_J*y_C*y_E+3*x_F^2*x_K*y_C*y_D-3*x_C^2*x_K*y_E*y_F+2*x_E^2*x_K*y_C*y_F-3*x_F^2*x_J*y_C*y_F-3*x_F^2*x_K*y_C*y_E+3*x_F^2*x_K*y_C*y_F-3*x_J*y_C*y_D*y_F^2-3*x_J*y_C^2*y_D*y_F+3*x_J*y_C*y_E*y_F^2+3*x_J*y_C^2*y_E*y_F+3*x_K*y_C*y_D*y_F^2+3*x_K*y_C^2*y_D*y_F-3*x_K*y_C*y_E*y_F^2-3*x_K*y_C^2*y_E*y_F+4*3^{1/2}*x_C*x_D^2*x_J*y_C+2*3^{1/2}*x_C^2*x_D*x_J*y_C-4*3^{1/2}*$

$$x_C*x_D^2*x_K*y_C-4*3^{1/2}*x_C^2*x_D*x_J*y_D-2*3^{1/2}*x_C^2*x_D*x_K*y_C-2*3^{1/2}*x_C^2*x_E*x_J*y_C-2*3^{1/2}*x_C*x_F^2*x_J*y_C+4*3^{1/2}*x_C^2*x_D*x_J*y_E+4*3^{1/2}*x_C^2*x_D*x_K*y_D+2*3^{1/2}*x_C^2*x_E*x_J*y_D+2*3^{1/2}*x_C^2*x_E*x_K*y_C+3^{1/2}*x_C^2*x_F*x_J*y_C-2*3^{1/2}*x_C*x_D^2*x_J*y_F+3*3^{1/2}*x_C*x_F^2*x_J*y_D+2*3^{1/2}*x_C*x_F^2*x_K*y_C-3^{1/2}*x_D*x_F^2*x_J*y_C+3*3^{1/2}*x_C^2*x_D*x_J*y_F-4*3^{1/2}*x_C^2*x_D*x_K*y_E-2*3^{1/2}*x_C^2*x_E*x_J*y_E-2*3^{1/2}*x_C^2*x_E*x_K*y_D-3*3^{1/2}*x_C^2*x_F*x_J*y_D-3^{1/2}*x_C^2*x_F*x_K*y_C-6*3^{1/2}*x_D^2*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D^2*x_K*y_F-6*3^{1/2}*x_C*x_E^2*x_J*y_F-3*3^{1/2}*x_C*x_F^2*x_J*y_E-3*3^{1/2}*x_C*x_F^2*x_K*y_D-2*3^{1/2}*x_D*x_F^2*x_J*y_D+3^{1/2}*x_D*x_F^2*x_K*y_C+3*3^{1/2}*x_E*x_F^2*x_J*y_C-3*3^{1/2}*x_C^2*x_D*x_K*y_F-3^{1/2}*x_C^2*x_E*x_J*y_F+2*3^{1/2}*x_C^2*x_E*x_K*y_E+3*3^{1/2}*x_C^2*x_F*x_J*y_E+3*3^{1/2}*x_C^2*x_F*x_K*y_D+6*3^{1/2}*x_D^2*x_F*x_K*y_C-2*3^{1/2}*x_E^2*x_F*x_J*y_C+6*3^{1/2}*x_C*x_E^2*x_K*y_F+3^{1/2}*x_C*x_F^2*x_J*y_F+3*3^{1/2}*x_C*x_F^2*x_K*y_E+2*3^{1/2}*x_D*x_F^2*x_J*y_E+2*3^{1/2}*x_D*x_F^2*x_K*y_D+4*3^{1/2}*x_E*x_F^2*x_J*y_D-3*3^{1/2}*x_E*x_F^2*x_K*y_C+3^{1/2}*x_C^2*x_E*x_K*y_F-2*3^{1/2}*x_C^2*x_F*x_J*y_F-3*3^{1/2}*x_C^2*x_F*x_K*y_E+2*3^{1/2}*x_E^2*x_F*x_K*y_C-3^{1/2}*x_C*x_F^2*x_K*y_F-2*3^{1/2}*x_D*x_F^2*x_J*y_F-2*3^{1/2}*x_D*x_F^2*x_K*y_E-4*3^{1/2}*x_E*x_F^2*x_J*y_E-4*3^{1/2}*x_E*x_F^2*x_K*y_D+2*3^{1/2}*x_C^2*x_F*x_K*y_F+2*3^{1/2}*x_D*x_F^2*x_K*y_F+2*3^{1/2}*x_E*x_F^2*x_J*y_F+4*3^{1/2}*x_E*x_F^2*x_K*y_E+4*3^{1/2}*x_E^2*x_F*x_J*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_F-4*3^{1/2}*x_C^2*x_J*x_K*y_D-4*3^{1/2}*x_E^2*x_F*x_K*y_F+4*3^{1/2}*x_C^2*x_J*x_K*y_E+4*3^{1/2}*x_C^2*x_J*x_K*y_F+4*3^{1/2}*x_F^2*x_J*x_K*y_C+4*3^{1/2}*x_F^2*x_J*x_K*y_D-4*3^{1/2}*x_F^2*x_J*x_K*y_E-2*3^{1/2}*x_C*x_J*y_C*y_F^2+3*3^{1/2}*x_C*x_J*y_C^2*y_F+2*3^{1/2}*x_E*x_J*y_C^2*y_D-3^{1/2}*x_C*x_J*y_D*y_F^2+2*3^{1/2}*x_C*x_K*y_C*y_F^2-3*3^{1/2}*x_C*x_K*y_C^2*y_F-3^{1/2}*x_D*x_J*y_C*y_F^2+3*3^{1/2}*x_D*x_J*y_C^2*y_F-2*3^{1/2}*x_E*x_J*y_C^2*y_E-2*3^{1/2}*x_E*x_K*y_C^2*y_D+3^{1/2}*x_F*x_J*y_C^2*y_D+3^{1/2}*x_C*x_J*y_E*y_F^2+3^{1/2}*x_C*x_K*y_D*y_F^2-2*3^{1/2}*x_D*x_J*y_D*y_F^2+3^{1/2}*x_D*x_K*y_C*y_F^2-3*3^{1/2}*x_D*x_K*y_C^2*y_F+3*3^{1/2}*x_E*x_J*y_C*y_F^2-3^{1/2}*x_E*x_J*y_C^2*y_F+2*3^{1/2}*x_E*x_K*y_C^2*y_E-3^{1/2}*x_F*x_J*y_C^2*y_E-3^{1/2}*x_F*x_K*y_C^2*y_D-3^{1/2}*x_C*x_K*y_E*y_F^2+2*3^{1/2}*x_D*x_J*y_E*y_F^2+2*3^{1/2}*x_D*x_K*y_D*y_F^2-3*3^{1/2}*x_E*x_K*y_C*y_F^2+3^{1/2}*x_E*x_K*y_C^2*y_F+3*3^{1/2}*x_F*x_J*y_C*y_F^2-2*3^{1/2}*x_F*x_J*y_C^2*y_F+3^{1/2}*x_F*x_K*y_C^2*y_E-2*3^{1/2}*x_D*x_K*y_E*y_F^2-3*3^{1/2}*x_F*x_K*y_C*y_F^2+2*3^{1/2}*x_F*x_K*y_C^2*y_F+4*3^{1/2}*x_J*x_K*y_C^2*y_D-4*3^{1/2}*x_J*x_K*y_C^2*y_E+4*3^{1/2}*x_J*x_K*y_C*y_F^2+4*3^{1/2}*x_J*x_K*y_C^2*y_F-4*3^{1/2}*x_J*x_K*y_D*y_F^2+4*3^{1/2}*x_J*x_K*y_E*y_F^2+8*3^{1/2}*x_C*x_D*x_J*y_D-8*3^{1/2}*x_C*x_D*x_J*y_E-8*3^{1/2}*x_C*x_D*x_K*y_D-4*3^{1/2}*x_C*x_E*x_J*y_D-2*3^{1/2}*x_C*x_F*x_J*y_C+4*3^{1/2}*x_D*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_J*y_F+8*3^{1/2}*x_C*x_D*x_K*y_E+4*3^{1/2}*x_C*x_E*x_J*y_E+4*3^{1/2}*x_C*x_E*x_K*y_D+6*3^{1/2}*x_C*x_F*x_J*y_D+2*3^{1/2}*x_C*x_F*x_K*y_C-4*3^{1/2}*x_D*x_E*x_K*y_C-4*3^{1/2}*x_D*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D*x_K*y_F-2*3^{1/2}*x_C*x_E*x_J*y_F-4*3^{1/2}*x_C*x_E*x_K*y_E-6*3^{1/2}*x_C*x_F*x_J*y_E-6*3^{1/2}*x_C*x_F*x_K*y_D-6*3^{1/2}*x_D*x_F*x_J*y_D+4*3^{1/2}*x_D*x_F*x_K*y_C+4*3^{1/2}*x_E*x_F*x_J*y_C+2*3^{1/2}*x_C*x_E*x_K*y_F+4*3^{1/2}*x_C*x_F*x_J*y_F+6*3^{1/2}*x_C*x_F*x_K*y_E-8*3^{1/2}*x_D*x_E*x_J*y_F+6*3^{1/2}*x_D*x_F*x_J*y_E+6*3^{1/2}*x_D*x_F*x_K*y_D+6*3^{1/2}*x_E*x_F*x_J*y_D-4*3^{1/2}*x_E*x_F*x_K*y_C-4*3^{1/2}*x_C*x_F*x_K*y_F+8*3^{1/2}*x_D*x_E*x_K*y_F-4*3^{1/2}*x_D*x_F*x_J*y_F-6*3^{1/2}*x_D*x_F*x_K*y_E-6*3^{1/2}*x_E*x_F*x_J*y_E-6*3^{1/2}*x_E*x_F*x_K*y_D+4*3^{1/2}*x_D*x_F*x_K*y_F+4*3^{1/2}*x_E*x_F*x_J*y_F+6*3^{1/2}*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_J*x_K*y_D-8*3^{1/2}*x_D*x_J*x_K*y_C-4*3^{1/2}*x_E*x_F*x_K*y_F-8*3^{1/2}*x_C*x_J*x_K*y_E+8*3^{1/2}*x_E*x_J*x_K*y_C-8*3^{1/2}*x_C*x_J*x_K*y_F-8*3^{1/2}*x_D*x_J*x_K*y_F+8*3^{1/2}*x_E*x_J*x_K*y_F+4*3^{1/2}*x_J*y_C*y_D*y_F-4*3^{1/2}*x_J*y_C*y_E*y_F-4*3^{1/2}*x_K*y_C*y_D*y_F+4*3^{1/2}*x_K*y_C*y_E*y_F-24*x_C*x_D*x_F*x_J*x_K+24*x_C*x_E*x_F*x_J*x_K-4*x_C*x_D*x_J*y_C*y_D+4*x_C*x_D*x_J*y_C*y_E+4*x_C*x_D*x_K*y_C*y_D+8*x_C*x_E*x_J*y_C*y_D+4*x_C*x_D*x_J*y_C*y_F-4*x_C*x_D*x_K*y_C*y_E-8*x_C*x_E*x_J*y_C*y_E-8*x_C*x_E*x_K*y_C*y_D-10*x_C*x_D*x_J*y_D*y_F-4*x_C*x_D*x_K*y_C*y_F+4*x_C*x_E*x_J*y_C*y_F+8*x_C*x_E*x_K*y_C*y_E+2*x_D*x_F*x_J*y_C*y_D+10*x_C*x_D*x_J*y_E*y_F+10*x_C*x_D*$$

$x_K*y_D*y_F+2*x_C*x_E*x_J*y_D*y_F-4*x_C*x_E*x_K*y_C*y_F-2*x_D*x_F*x_J*y_C*y_E-2*x_D*x_F*x_K*y_C*y_D-10*x_E*x_F*x_J*y_C*y_D-10*x_C*x_D*x_K*y_E*y_F-2*x_C*x_E*x_J*y_E*y_F-2*x_C*x_E*x_K*y_D*y_F-4*x_D*x_F*x_J*y_C*y_F+2*x_D*x_F*x_K*y_C*y_E+10*x_E*x_F*x_J*y_C*y_E+10*x_E*x_F*x_K*y_C*y_D+2*x_C*x_E*x_K*y_E*y_F+8*x_D*x_F*x_J*y_D*y_F+4*x_D*x_F*x_K*y_C*y_F-4*x_E*x_F*x_J*y_C*y_F-10*x_E*x_F*x_K*y_C*y_E+8*x_C*x_J*x_K*y_C*y_D-8*x_D*x_F*x_J*y_E*y_F-8*x_D*x_F*x_K*y_D*y_F-4*x_E*x_F*x_J*y_D*y_F+4*x_E*x_F*x_K*y_C*y_F-8*x_C*x_J*x_K*y_C*y_E+8*x_D*x_F*x_K*y_E*y_F+4*x_E*x_F*x_J*y_E*y_F+4*x_E*x_F*x_K*y_D*y_F+16*x_C*x_J*x_K*y_C*y_F-4*x_E*x_F*x_K*y_E*y_F-16*x_C*x_J*x_K*y_D*y_F+8*x_D*x_J*x_K*y_C*y_F-16*x_F*x_J*x_K*y_C*y_D+16*x_C*x_J*x_K*y_E*y_F-8*x_E*x_J*x_K*y_C*y_F+16*x_F*x_J*x_K*y_C*y_E-16*x_F*x_J*x_K*y_C*y_F+8*x_F*x_J*x_K*y_D*y_F-8*x_F*x_J*x_K*y_E*y_F-4*3^{1/2}*x_C*x_D*x_E*x_J*y_C+4*3^{1/2}*x_C*x_D*x_E*x_K*y_C+6*3^{1/2}*x_C*x_D*x_F*x_J*y_D+8*3^{1/2}*x_C*x_D*x_E*x_J*y_F-6*3^{1/2}*x_C*x_D*x_F*x_J*y_E-6*3^{1/2}*x_C*x_D*x_F*x_K*y_D-6*3^{1/2}*x_C*x_E*x_F*x_J*y_D+8*3^{1/2}*x_D*x_E*x_F*x_J*y_C-8*3^{1/2}*x_C*x_D*x_E*x_K*y_F+6*3^{1/2}*x_C*x_D*x_F*x_K*y_E+6*3^{1/2}*x_C*x_E*x_F*x_J*y_E+6*3^{1/2}*x_C*x_E*x_F*x_K*y_D-8*3^{1/2}*x_D*x_E*x_F*x_K*y_C-6*3^{1/2}*x_C*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_D*x_J*x_K*y_C-4*3^{1/2}*x_D*x_E*x_F*x_J*y_F-8*3^{1/2}*x_C*x_E*x_J*x_K*y_C+4*3^{1/2}*x_D*x_E*x_F*x_K*y_F+8*3^{1/2}*x_C*x_D*x_J*x_K*y_F-8*3^{1/2}*x_D*x_F*x_J*x_K*y_C-8*3^{1/2}*x_C*x_E*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_C-8*3^{1/2}*x_D*x_F*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_F-4*3^{1/2}*x_C*x_J*y_C*y_D*y_F+4*3^{1/2}*x_C*x_J*y_C*y_E*y_F+4*3^{1/2}*x_C*x_K*y_C*y_D*y_F-2*3^{1/2}*x_D*x_J*y_C*y_D*y_F-4*3^{1/2}*x_C*x_K*y_C*y_E*y_F+2*3^{1/2}*x_D*x_J*y_C*y_E*y_F+2*3^{1/2}*x_D*x_K*y_C*y_D*y_F+2*3^{1/2}*x_E*x_J*y_C*y_D*y_F-2*3^{1/2}*x_D*x_K*y_C*y_E*y_F-2*3^{1/2}*x_E*x_J*y_C*y_E*y_F-2*3^{1/2}*x_E*x_K*y_C*y_D*y_F+4*3^{1/2}*x_F*x_J*y_C*y_D*y_F+2*3^{1/2}*x_E*x_K*y_C*y_E*y_F-4*3^{1/2}*x_F*x_J*y_C*y_E*y_F-4*3^{1/2}*x_F*x_K*y_C*y_D*y_F+4*3^{1/2}*x_F*x_K*y_C*y_E*y_F)/(2*(3*x_J-x_K)*(y_C+y_F+3^{1/2}*x_C-3^{1/2}*x_F-3^{1/2})*(y_D-y_E-y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F-x_C*y_D+x_D*y_C+x_C*y_E-x_E*y_C+x_C*y_F-x_F*y_C+x_D*y_F-x_F*y_D-x_E*y_F+x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F)), -(3*x_F*x_J-3*x_F*x_K+3*x_F^2*x_J-3*x_F^2*x_K-4*x_J*y_D^2-2*x_J*y_E^2+4*x_K*y_D^2+3*x_J*y_F^2+2*x_K*y_E^2-3*x_K*y_F^2-3*x_C*x_F^2*x_J+3*x_C^2*x_F*x_J+3*x_C*x_F^2*x_K-3*x_C^2*x_F*x_K+4*x_C*x_J*y_D^2+2*x_C*x_J*y_E^2-4*x_C*x_K*y_D^2-3*x_C*x_J*y_F^2-2*x_C*x_K*y_E^2+3*x_F*x_J*y_C^2+3*x_C*x_K*y_F^2-2*x_F*x_J*y_D^2-3*x_F*x_K*y_C^2-4*x_F*x_J*y_E^2+2*x_F*x_K*y_D^2+4*x_F*x_K*y_E^2-2*3^{1/2}*x_J*y_D+2*3^{1/2}*x_J*y_E+2*3^{1/2}*x_K*y_D-3^{1/2}*x_J*y_F-2*3^{1/2}*x_K*y_E+3^{1/2}*x_K*y_F-6*x_C*x_F*x_J+6*x_C*x_F*x_K+3*x_D*x_F*x_J-3*x_D*x_F*x_K-3*x_E*x_F*x_J+3*x_E*x_F*x_K+6*x_J*y_D*y_E+x_J*y_D*y_F-6*x_K*y_D*y_E+x_J*y_E*y_F-x_K*y_D*y_F-x_K*y_E*y_F-4*x_K*y_D*y_J+4*x_K*y_E*y_J+4*x_K*y_F*y_J+4*3^{1/2}*x_C*x_J*y_D-4*3^{1/2}*x_C*x_J*y_E-4*3^{1/2}*x_C*x_K*y_D+2*3^{1/2}*x_C*x_J*y_F+4*3^{1/2}*x_C*x_K*y_E+2*3^{1/2}*x_D*x_J*y_E-2*3^{1/2}*x_C*x_K*y_F+3^{1/2}*x_D*x_J*y_F-2*3^{1/2}*x_D*x_K*y_E-2*3^{1/2}*x_E*x_J*y_E+3^{1/2}*x_F*x_J*y_D-3^{1/2}*x_D*x_K*y_F-3^{1/2}*x_E*x_J*y_F+2*3^{1/2}*x_E*x_K*y_E+3^{1/2}*x_F*x_J*y_E-3^{1/2}*x_F*x_K*y_D+3^{1/2}*x_E*x_K*y_F-3^{1/2}*x_F*x_K*y_E+4*3^{1/2}*x_D*x_K*y_J-4*3^{1/2}*x_E*x_K*y_J+4*3^{1/2}*x_F*x_K*y_J-3*x_C*x_D*x_F*x_J+3*x_C*x_D*x_F*x_K+3*x_C*x_E*x_F*x_J-3*x_C*x_E*x_F*x_K-4*x_D*x_J*y_C*y_D-6*x_C*x_J*y_D*y_E+2*x_D*x_J*y_C*y_E+4*x_D*x_K*y_C*y_D+4*x_E*x_J*y_C*y_D-x_C*x_J*y_D*y_F+6*x_C*x_K*y_D*y_E-3*x_D*x_J*y_C*y_F-2*x_D*x_K*y_C*y_E-2*x_E*x_J*y_C*y_E-4*x_E*x_K*y_C*y_D+x_F*x_J*y_C*y_D-x_C*x_J*y_E*y_F+x_C*x_K*y_D*y_F+2*x_D*x_J*y_D*y_F+3*x_D*x_K*y_C*y_F+3*x_E*x_J*y_C*y_F+2*x_E*x_K*y_C*y_E+x_F*x_J*y_C*y_E-x_F*x_K*y_C*y_D+x_C*x_K*y_E*y_F-4*x_D*x_J*y_E*y_F-2*x_D*x_K*y_D*y_F-2*x_E*x_J*y_D*y_F-3*x_E*x_K*y_C*y_F+6*x_F*x_J*y_D*y_E-x_F*x_K*y_C*y_E+4*x_D*x_K*y_E*y_F+4*x_E*x_J*y_E*y_F+2*x_E*x_K*y_D*y_F-6*x_F*x_K*y_D*y_E-4*x_E*$

$x_K*y_E*y_F+4*x_C*x_K*y_D*y_J-4*x_D*x_K*y_C*y_J-4*x_C*x_K*y_E*y_J+4*x_E*x_K*y_C*y_J-4*x_C*x_K*y_F*y_J+4*x_F*x_K*y_C*y_J-4*x_D*x_K*y_F*y_J+4*x_F*x_K*y_D*y_J+4*x_E*x_K*y_F*y_J-4*x_F*x_K*y_E*y_J-2*3^{1/2}*x_C^2*x_J*y_D+2*3^{1/2}*x_C^2*x_J*y_E+2*3^{1/2}*x_C^2*x_K*y_D-3^{1/2}*x_C^2*x_J*y_F-2*3^{1/2}*x_C^2*x_K*y_E-3^{1/2}*x_F^2*x_J*y_C+3^{1/2}*x_C^2*x_K*y_F+2*3^{1/2}*x_F^2*x_J*y_D+3^{1/2}*x_F^2*x_K*y_C-2*3^{1/2}*x_F^2*x_J*y_E-2*3^{1/2}*x_F^2*x_K*y_D+2*3^{1/2}*x_F^2*x_K*y_E-2*3^{1/2}*x_J*y_C^2*y_D+2*3^{1/2}*x_J*y_C*y_E^2+2*3^{1/2}*x_J*y_C^2*y_E+2*3^{1/2}*x_K*y_C^2*y_D-3^{1/2}*x_J*y_C*y_F^2-3^{1/2}*x_J*y_C^2*y_F-2*3^{1/2}*x_K*y_C*y_E^2-2*3^{1/2}*x_K*y_C^2*y_E+2*3^{1/2}*x_J*y_D*y_F^2+2*3^{1/2}*x_J*y_D^2*y_F+3^{1/2}*x_K*y_C*y_F^2+3^{1/2}*x_K*y_C^2*y_F-2*3^{1/2}*x_J*y_E*y_F^2-2*3^{1/2}*x_K*y_D*y_F^2-2*3^{1/2}*x_K*y_D^2*y_F+2*3^{1/2}*x_K*y_E*y_F^2-2*3^{1/2}*x_C*x_D*x_J*y_E-3^{1/2}*x_C*x_D*x_J*y_F+2*3^{1/2}*x_C*x_D*x_K*y_E+2*3^{1/2}*x_C*x_E*x_J*y_E-3^{1/2}*x_C*x_F*x_J*y_D+3^{1/2}*x_D*x_F*x_J*y_C+3^{1/2}*x_C*x_D*x_K*y_F+3^{1/2}*x_C*x_E*x_J*y_F-2*3^{1/2}*x_C*x_E*x_K*y_E-3^{1/2}*x_C*x_F*x_J*y_E+3^{1/2}*x_C*x_F*x_K*y_D+2*3^{1/2}*x_D*x_F*x_J*y_D-3^{1/2}*x_D*x_F*x_K*y_C-3^{1/2}*x_E*x_F*x_J*y_C-3^{1/2}*x_C*x_E*x_K*y_F+3^{1/2}*x_C*x_F*x_K*y_E-2*3^{1/2}*x_D*x_F*x_K*y_D-2*3^{1/2}*x_E*x_F*x_J*y_D+3^{1/2}*x_E*x_F*x_K*y_C+2*3^{1/2}*x_E*x_F*x_K*y_D-4*3^{1/2}*x_C*x_D*x_K*y_J+4*3^{1/2}*x_C*x_E*x_K*y_J-4*3^{1/2}*x_C*x_F*x_K*y_J+4*3^{1/2}*x_D*x_F*x_K*y_J-4*3^{1/2}*x_E*x_F*x_K*y_J-2*3^{1/2}*x_J*y_C*y_D*y_E-3^{1/2}*x_J*y_C*y_D*y_F+2*3^{1/2}*x_K*y_C*y_D*y_E-3^{1/2}*x_J*y_C*y_E*y_F+3^{1/2}*x_K*y_C*y_D*y_F-2*3^{1/2}*x_J*y_D*y_E*y_F+3^{1/2}*x_K*y_C*y_E*y_F+2*3^{1/2}*x_K*y_D*y_E*y_F-4*3^{1/2}*x_K*y_C*y_D*y_J+4*3^{1/2}*x_K*y_C*y_E*y_J-4*3^{1/2}*x_K*y_C*y_F*y_J+4*3^{1/2}*x_K*y_D*y_F*y_J-4*3^{1/2}*x_K*y_E*y_F*y_J)/(2*(3*x_J-x_K)*(y_D-y_E-y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F-x_C*y_D+x_D*y_C+x_C*y_E-x_E*y_C+x_C*y_F-x_F*y_C+x_D*y_F-x_F*y_D-x_E*y_F+x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F))).$

Case 2: the mounted triangles are internal.

The line between the W coordinates in theorems 2.2 and 2.3 is given by the equation

$y = (((x_K-x_J)*y_F+2*(x_K-x_J)*y_C+(x_J-x_K)*y_C+3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_K+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_F-x_E+x_D-x_C+1)*x_J-3^{1/2}*(x_E-x_D)*x_J)*(2*(x_K-3*x_J)*x+3^{1/2}*(x_K-x_J)*y_E-3^{1/2}*(x_K-x_J)*y_D+(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K+(2*(x_F+x_C)+x_E+x_D)*x_J))/(2*(x_K-3*x_J)*(-3^{1/2}*(x_K-x_J)*y_F+3^{1/2}*(x_K-x_J)*y_C-(4*x_J-2*(x_F+x_C)-x_E-x_D)*x_K-(-4*x_J+x_F+x_E+x_D+x_C+1)*x_K-(2*(x_F+x_C)+x_E+x_D)*x_J-(-x_F-x_E-x_D-x_C-1)*x_J))+(-4*x_K*y_J+2*(x_K-x_J)*y_F-(x_J-x_K)*y_E-(x_J-x_K)*y_D+2*(x_K-x_J)*y_C+3^{1/2}*(x_E-x_D)*x_K-3^{1/2}*(x_E-x_D)*x_J)/(2*(x_K-3*x_J)).$

The line between C_1 in theorem 2.2 and G_1 in theorem 2.3 is given by the equation

$y = (((2*x_K*y_J+(x_J-x_K)*y_F+(x_J-x_K)*y_D)/(x_K-3*x_J)-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*x_K-6*x_J))*(x-(3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*x_E-2)*x_K+(-x_F-2*x_E-2)*x_J)/(2*(x_K-3*x_J))))/((3^{1/2}*(x_K-x_J)*y_F-(4*x_J-x_F-2*x_E-2)*x_K+(-x_F-2*x_E-2)*x_J)/(2*(x_K-3*x_J))+((2*x_J-x_F-x_D-1)*x_K+(x_F+x_D+1)*x_J)/(x_K-3*x_J))-(4*x_K*y_J+(x_J-x_K)*y_F+(2*x_J-2*x_K)*y_E+3^{1/2}*x_F*x_K-3^{1/2}*x_F*x_J)/(2*x_K-6*x_J).$

The line between G_1 in theorem 2.2 and C_1 in theorem 2.3 is given by the equation

$y = (((2*x_K*y_J+(x_J-x_K)*y_E+(x_J-x_K)*y_C)/(x_K-3*x_J)-(4*x_K*y_J-2*(x_K-x_J)*y_D+(x_J-x_K)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)))*(x+(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*x_D-x_C-1)*x_K+(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J))))/(((2*x_J-x_E-x_C)*x_K+(x_E+x_C)*x_J)/(x_K-3*x_J)-(3^{1/2}*(x_K-x_J)*y_C+(4*x_J-2*x_D-x_C-1)*x_K+(2*x_D+x_C+1)*x_J)/(2*(x_K-3*x_J)))-(4*x_K*y_J-2*(x_K-x_J)*y_D+(x_J-x_K)*y_C-3^{1/2}*(x_C-1)*x_K+3^{1/2}*(x_C-1)*x_J)/(2*(x_K-3*x_J)).$

One can then verify that the following point lies on all three lines, whose coordinates are given by

$$((3*x_F*x_K-3*x_F*x_J+6*x_E^2*x_J-6*x_E^2*x_K-6*x_F^2*x_J-3*x_F^3*x_J+6*x_F^2*x_K+3*x_F^3*x_K-4*x_J*y_F^2+4*x_K*y_F^2-3^{1/2}*x_J*y_F^3+3^{1/2}*x_K*y_F^3+12*x_C^2*x_D*x_J-6*x_C^3*x_D*x_J-12*x_C*x_E^2*x_J-12*x_C^2*x_D*x_K-12*x_C^2*x_E*x_J+6*x_C^3*x_D*x_K+6*x_C^3*x_E*x_J+12*x_C*x_E^2*x_K+6*x_C*x_F^2*x_J+12*x_C^2*x_E*x_K+3*x_C^2*x_F*x_J+3*x_C*x_F^3*x_J-6*x_C^3*x_E*x_K-3*x_C^3*x_F*x_J-6*x_C*x_F^2*x_K-15*x_D*x_F^2*x_J-3*x_C^2*x_F*x_K-6*x_D^2*x_F*x_J-3*x_C*x_F^3*x_K-6*x_D*x_F^3*x_J+3*x_C^3*x_F*x_K+15*x_D*x_F^2*x_K+9*x_E*x_F^2*x_J+6*x_D^2*x_F*x_K+6*x_E^2*x_F*x_J+6*x_D*x_F^3*x_K+6*x_E*x_F^3*x_J-9*x_E*x_F^2*x_K-6*x_E^2*x_F*x_K-6*x_E*x_F^3*x_K-12*x_F^2*x_J*x_K+4*x_D*x_J*y_C^2-4*x_D*x_K*y_C^2-4*x_E*x_J*y_C^2+10*x_C*x_J*y_F^2+4*x_E*x_K*y_C^2+5*x_F*x_J*y_C^2-10*x_C*x_K*y_F^2-7*x_D*x_J*y_F^2-5*x_F*x_K*y_C^2+7*x_D*x_K*y_F^2+9*x_E*x_J*y_F^2-9*x_E*x_K*y_F^2-3*x_F*x_J*y_F^2+3*x_F*x_K*y_F^2+4*x_J*x_K*y_F^2+3*x_J*y_C*y_F^3-3*x_J*y_C^3*y_F-3*x_K*y_C*y_F^3+3*x_K*y_C^3*y_F+6*x_C^2*x_E^2*x_J-6*x_C^2*x_E^2*x_K-6*x_D^2*x_F^2*x_J+6*x_D^2*x_F^2*x_K-4*x_D^2*x_J*y_C^2+4*x_D^2*x_K*y_C^2-2*x_E^2*x_J*y_C^2-6*x_C^2*x_J*y_F^2+2*x_E^2*x_K*y_C^2+6*x_C^2*x_F^2*x_J*y_C^2+6*x_C^2*x_K*y_F^2+2*x_D^2*x_J*y_F^2-6*x_F^2*x_K*y_C^2-2*x_D^2*x_K*y_F^2+4*x_E^2*x_J*y_F^2-4*x_E^2*x_K*y_F^2-2*3^{1/2}*x_J*y_D+2*3^{1/2}*x_J*y_E+2*3^{1/2}*x_K*y_D-3^{1/2}*x_J*y_F-2*3^{1/2}*x_K*y_E+3^{1/2}*x_K*y_F-6*x_C*x_D*x_J+6*x_C*x_D*x_K+6*x_C*x_E*x_J-6*x_C*x_E*x_K+3*x_C*x_F*x_J-6*x_D*x_E*x_J-3*x_C*x_F*x_K+6*x_D*x_E*x_K-9*x_D*x_F*x_J+9*x_D*x_F*x_K+3*x_E*x_F*x_J-3*x_E*x_F*x_K-12*x_D*x_J*x_K+12*x_E*x_J*x_K-12*x_F*x_J*x_K+4*x_J*y_C*y_D-4*x_J*y_C*y_E-4*x_K*y_C*y_D+5*x_J*y_C*y_F+4*x_K*y_C*y_E-5*x_J*y_D*y_F-5*x_K*y_C*y_F+5*x_J*y_E*y_F+5*x_K*y_D*y_F-5*x_K*y_E*y_F+4*3^{1/2}*x_C*x_J*y_D-2*3^{1/2}*x_D*x_J*y_C-4*3^{1/2}*x_C*x_J*y_E-4*3^{1/2}*x_C*x_K*y_D-4*3^{1/2}*x_D*x_J*y_D+2*3^{1/2}*x_D*x_K*y_C+2*3^{1/2}*x_E*x_J*y_C+5*3^{1/2}*x_C*x_J*y_F+4*3^{1/2}*x_C*x_K*y_E+4*3^{1/2}*x_D*x_J*y_E+4*3^{1/2}*x_D*x_K*y_D+2*3^{1/2}*x_E*x_J*y_D-2*3^{1/2}*x_E*x_K*y_C+3^{1/2}*x_F*x_J*y_C-5*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F-4*3^{1/2}*x_D*x_K*y_E-2*3^{1/2}*x_E*x_J*y_E-2*3^{1/2}*x_E*x_K*y_D-3*3^{1/2}*x_F*x_J*y_D-3^{1/2}*x_F*x_K*y_C+3^{1/2}*x_D*x_K*y_F+3*3^{1/2}*x_E*x_J*y_F+2*3^{1/2}*x_E*x_K*y_E+3*3^{1/2}*x_F*x_J*y_E+3*3^{1/2}*x_F*x_K*y_D-3*3^{1/2}*x_E*x_K*y_F-2*3^{1/2}*x_F*x_J*y_F-3*3^{1/2}*x_F*x_K*y_E+2*3^{1/2}*x_F*x_K*y_F-4*3^{1/2}*x_J*x_K*y_D+4*3^{1/2}*x_J*x_K*y_E+4*3^{1/2}*x_J*x_K*y_F+12*x_C*x_D*x_E*x_J-12*x_C*x_D*x_E*x_K+6*x_C*x_D*x_F*x_J-6*x_C*x_D*x_F*x_K+6*x_C*x_E*x_F*x_J-6*x_C*x_E*x_F*x_K+24*x_C*x_D*x_J*x_K-24*x_C*x_E*x_J*x_K+24*x_C*x_F*x_J*x_K-24*x_D*x_F*x_J*x_K+24*x_E*x_F*x_J*x_K-4*x_C*x_J*y_C*y_D+4*x_C*x_J*y_C*y_E+4*x_C*x_K*y_C*y_D-4*x_D*x_J*y_C*y_D-2*x_C*x_J*y_C*y_F-4*x_C*x_K*y_C*y_E+4*x_D*x_J*y_C*y_E+4*x_D*x_K*y_C*y_D+8*x_E*x_J*y_C*y_D+2*x_C*x_J*y_D*y_F+2*x_C*x_K*y_C*y_F-4*x_D*x_K*y_C*y_E-8*x_E*x_J*y_C*y_E-8*x_E*x_K*y_C*y_D+8*x_F*x_J*y_C*y_D-2*x_C*x_J*y_E*y_F-2*x_C*x_K*y_D*y_F-10*x_D*x_J*y_D*y_F+8*x_E*x_J*y_C*y_F+8*x_E*x_K*y_C*y_E-8*x_F*x_J*y_C*y_E-8*x_F*x_K*y_C*y_D+2*x_C*x_K*y_E*y_F+10*x_D*x_J*y_E*y_F+10*x_D*x_K*y_D*y_F+2*x_E*x_J*y_D*y_F-8*x_E*x_K*y_C*y_F+8*x_F*x_J*y_C*y_F+8*x_F*x_K*y_C*y_E-10*x_D*x_K*y_E*y_F-2*x_E*x_J*y_E*y_F-2*x_E*x_K*y_D*y_F-4*x_F*x_J*y_D*y_F-8*x_F*x_K*y_C*y_F+2*x_E*x_K*y_E*y_F+4*x_F*x_J*y_E*y_F+4*x_F*x_K*y_D*y_F-4*x_F*x_K*y_E*y_F+8*x_J*x_K*y_C*y_D-8*x_J*x_K*y_C*y_E+16*x_J*x_K*y_C*y_F-16*x_J*x_K*y_D*y_F+16*x_J*x_K*y_E*y_F-2*3^{1/2}*x_C^2*x_J*y_D-4*3^{1/2}*x_D^2*x_J*y_C+2*3^{1/2}*x_D*x_J*y_C^2+2*3^{1/2}*x_C^2*x_J*y_E+2*3^{1/2}*x_C^2*x_K*y_D+4*3^{1/2}*x_D^2*x_K*y_C-2*3^{1/2}*x_D*x_K*y_C^2-2*3^{1/2}*x_E*x_J*y_C^2-7*3^{1/2}*x_C^2*x_J*y_F-2*3^{1/2}*x_C^2*x_K*y_E+4*3^{1/2}*x_F^2*x_J*y_C+3^{1/2}*x_C*x_J*y_F^2+2*3^{1/2}*x_E*x_K*y_C^2+3^{1/2}*x_F*x_J*y_C^2+3*3^{1/2}*x_C^2*x_J*y_F+3*3^{1/2}*x_F^2*x_J*y_C+7*3^{1/2}*x_C^2*x_K*y_F+2*3^{1/2}*x_D^2*x_J*y_F-3^{1/2}*x_F^2*x_J*y_D-4*3^{1/2}*x_F^2*x_K*y_C-3^{1/2}*x_C*x_K*y_F^2-2*3^{1/2}*x_D*x_J*y_F^2-3^{1/2}*x_F*x_K*y_C^2-3*3^{1/2}*x_C^2*x_K*y_F-3*3^{1/2}*x_F^2*x_K*y_C-2*3^{1/2}*x_D^2*x_K*y_F+6*3^{1/2}*x_E^2*x_J*y_F+3^{1/2}*x_F^2*$$

$x_J*y_E+3^{1/2}*x_F^2*x_K*y_D+2*3^{1/2}*x_D*x_K*y_F^3+2*3^{1/2}*x_E*x_J*y_F^3-6*3^{1/2}*x_E^2*x_K*y_F-3^{1/2}*x_F^2*x_J*y_F-3^{1/2}*x_F^2*x_K*y_E-2*3^{1/2}*x_E*x_K*y_F^3+3^{1/2}*x_F^2*x_K*y_F+2*3^{1/2}*x_J*y_C^2*y_D-2*3^{1/2}*x_J*y_C^2*y_E-2*3^{1/2}*x_K*y_C^2*y_D+4*3^{1/2}*x_J*y_C*y_F^2-3^{1/2}*x_J*y_C^2*y_F+2*3^{1/2}*x_K*y_C^2*y_E-3^{1/2}*x_J*y_D*y_F^2-4*3^{1/2}*x_K*y_C*y_F^2+3^{1/2}*x_K*y_C^2*y_F+3^{1/2}*x_J*y_E*y_F^2+3^{1/2}*x_K*y_D*y_F^2-3^{1/2}*x_K*y_E*y_F^2-6*x_C^2*x_D*x_E*x_J+9*x_C*x_D*x_F^2*x_J+6*x_C*x_D^2*x_F*x_J+6*x_C^2*x_D*x_E*x_K+3*x_C^2*x_D*x_F*x_J-9*x_C*x_D*x_F^2*x_K-3*x_C*x_E*x_F^2*x_J-6*x_C*x_D^2*x_F*x_K-6*x_C*x_E^2*x_F*x_J-3*x_C^2*x_D*x_F*x_K-9*x_C^2*x_E*x_F*x_J+3*x_C*x_E*x_F^2*x_K+6*x_C*x_E^2*x_F*x_K+6*x_D*x_E*x_F^2*x_J+9*x_C^2*x_E*x_F*x_K-6*x_D*x_E*x_F^2*x_K-12*x_C^2*x_D*x_J*x_K+12*x_C^2*x_E*x_J*x_K+12*x_C*x_F^2*x_J*x_K-12*x_C^2*x_F*x_J*x_K-12*x_D*x_F^2*x_J*x_K+12*x_E*x_F^2*x_J*x_K-6*x_C*x_D*x_J*y_C^2+6*x_C*x_D*x_K*y_C^2+6*x_C*x_E*x_J*y_C^2-6*x_C*x_E*x_K*y_C^2-3*x_C*x_F*x_J*y_C^2+6*x_D*x_E*x_J*y_C^2+5*x_C*x_D*x_J*y_F^2+3*x_C*x_F*x_K*y_C^2-6*x_D*x_E*x_K*y_C^2+7*x_D*x_F*x_J*y_C^2-5*x_C*x_D*x_K*y_F^2-7*x_C*x_E*x_J*y_F^2-7*x_D*x_F*x_K*y_C^2-5*x_E*x_F*x_J*y_C^2+7*x_C*x_E*x_K*y_F^2+3*x_C*x_F*x_J*y_F^2-6*x_D*x_E*x_J*y_F^2+5*x_E*x_F*x_K*y_C^2-3*x_C*x_F*x_K*y_F^2+6*x_D*x_E*x_K*y_F^2-6*x_D*x_F*x_J*y_F^2+6*x_D*x_F*x_K*y_F^2+6*x_E*x_F*x_J*y_F^2-4*x_D*x_J*x_K*y_C^2-6*x_E*x_F*x_K*y_F^2+4*x_E*x_J*x_K*y_C^2-4*x_C*x_J*x_K*y_F^2+4*x_F*x_J*x_K*y_C^2-4*x_D*x_J*x_K*y_F^2+4*x_E*x_J*x_K*y_F^2-3*x_C^2*x_J*y_C*y_F+3*x_C^2*x_J*y_D*y_F+3*x_C^2*x_K*y_C*y_F-2*x_D^2*x_J*y_C*y_F+3*x_F^2*x_J*y_C*y_D-3*x_C^2*x_J*y_E*y_F-3*x_C^2*x_K*y_D*y_F+2*x_D^2*x_K*y_C*y_F+2*x_E^2*x_J*y_C*y_F-3*x_F^2*x_J*y_C*y_E-3*x_F^2*x_K*y_C*y_D+3*x_C^2*x_K*y_E*y_F-2*x_E^2*x_K*y_C*y_F+3*x_F^2*x_J*y_C*y_F+3*x_F^2*x_K*y_C*y_E-3*x_F^2*x_K*y_C*y_F+3*x_J*y_C*y_D*y_F^2+3*x_J*y_C^2*y_D*y_F-3*x_J*y_C*y_E*y_F^2-3*x_J*y_C^2*y_E*y_F-3*x_K*y_C*y_D*y_F^2-3*x_K*y_C^2*y_D*y_F+3*x_K*y_C*y_E*y_F^2+3*x_K*y_C^2*y_E*y_F+4*3^{1/2}*x_C*x_D^2*x_J*y_C+2*3^{1/2}*x_C^2*x_D*x_J*y_C-4*3^{1/2}*x_C*x_D^2*x_K*y_C-4*3^{1/2}*x_C^2*x_D*x_J*y_D-2*3^{1/2}*x_C^2*x_D*x_K*y_C-2*3^{1/2}*x_C^2*x_E*x_J*y_C-2*3^{1/2}*x_C*x_F^2*x_J*y_C+4*3^{1/2}*x_C^2*x_D*x_J*y_E+4*3^{1/2}*x_C^2*x_D*x_K*y_D+2*3^{1/2}*x_C^2*x_E*x_J*y_D+2*3^{1/2}*x_C^2*x_E*x_K*y_C+3^{1/2}*x_C^2*x_F*x_J*y_C-2*3^{1/2}*x_C*x_D^2*x_J*y_F+3*3^{1/2}*x_C*x_F^2*x_J*y_D+2*3^{1/2}*x_C*x_F^2*x_K*y_C-3^{1/2}*x_D*x_F^2*x_J*y_C+3*3^{1/2}*x_C^2*x_D*x_J*y_F-4*3^{1/2}*x_C^2*x_D*x_K*y_E-2*3^{1/2}*x_C^2*x_E*x_J*y_E-2*3^{1/2}*x_C^2*x_E*x_K*y_D-3*3^{1/2}*x_C^2*x_F*x_J*y_D-3^{1/2}*x_C^2*x_F*x_K*y_C-6*3^{1/2}*x_D^2*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D^2*x_K*y_F-6*3^{1/2}*x_C*x_E^2*x_J*y_F-3*3^{1/2}*x_C*x_F^2*x_J*y_E-3*3^{1/2}*x_C*x_F^2*x_K*y_D-2*3^{1/2}*x_D*x_F^2*x_J*y_D+3^{1/2}*x_D*x_F^2*x_K*y_C+3*3^{1/2}*x_E*x_F^2*x_J*y_C-3*3^{1/2}*x_C^2*x_D*x_K*y_F-3^{1/2}*x_C^2*x_E*x_J*y_F+2*3^{1/2}*x_C^2*x_E*x_K*y_E+3*3^{1/2}*x_C^2*x_F*x_J*y_E+3*3^{1/2}*x_C^2*x_F*x_K*y_D+6*3^{1/2}*x_D^2*x_F*x_K*y_C-2*3^{1/2}*x_E^2*x_F*x_J*y_C+6*3^{1/2}*x_C*x_E^2*x_K*y_F+3^{1/2}*x_C*x_F^2*x_J*y_F+3*3^{1/2}*x_C*x_F^2*x_K*y_E+2*3^{1/2}*x_D*x_F^2*x_J*y_E+2*3^{1/2}*x_D*x_F^2*x_K*y_D+4*3^{1/2}*x_E*x_F^2*x_J*y_D-3*3^{1/2}*x_E*x_F^2*x_K*y_C+3^{1/2}*x_C^2*x_E*x_K*y_F-2*3^{1/2}*x_C^2*x_F*x_J*y_F-3*3^{1/2}*x_C^2*x_F*x_K*y_E+2*3^{1/2}*x_E^2*x_F*x_K*y_C-3^{1/2}*x_C*x_F^2*x_K*y_F-2*3^{1/2}*x_D*x_F^2*x_J*y_F-2*3^{1/2}*x_D*x_F^2*x_K*y_E-4*3^{1/2}*x_E*x_F^2*x_J*y_E-4*3^{1/2}*x_E*x_F^2*x_K*y_D+2*3^{1/2}*x_C^2*x_F*x_K*y_F+2*3^{1/2}*x_D*x_F^2*x_K*y_F+2*3^{1/2}*x_E*x_F^2*x_J*y_F+4*3^{1/2}*x_E*x_F^2*x_K*y_E+4*3^{1/2}*x_E^2*x_F*x_J*y_F-2*3^{1/2}*x_E*x_F^2*x_K*y_F-4*3^{1/2}*x_C^2*x_J*x_K*y_D-4*3^{1/2}*x_E^2*x_F*x_K*y_F+4*3^{1/2}*x_C^2*x_J*x_K*y_E+4*3^{1/2}*x_C^2*x_J*x_K*y_F+4*3^{1/2}*x_F^2*x_J*x_K*y_C+4*3^{1/2}*x_F^2*x_J*x_K*y_D-4*3^{1/2}*x_F^2*x_J*x_K*y_E-2*3^{1/2}*x_C*x_J*y_C*y_F^2+3*3^{1/2}*x_C*x_J*y_C^2*y_F+2*3^{1/2}*x_E*x_J*y_C^2*y_D-3^{1/2}*x_C*x_J*y_D*y_F^2+2*3^{1/2}*x_C*x_K*y_C*y_F^2-3*3^{1/2}*x_C*x_K*y_C^2*y_F-3^{1/2}*x_D*x_J*y_C*y_F^2+3*3^{1/2}*x_D*x_J*y_C^2*y_F-2*3^{1/2}*x_E*x_J*y_C^2*y_E-2*3^{1/2}*x_E*x_K*y_C^2*y_D+3^{1/2}*x_F*x_J*y_C^2*y_D+3^{1/2}*x_C*x_J*y_E*y_F^2+3^{1/2}*x_C*x_K*y_D*y_F^2-2*3^{1/2}*x_D*x_J*y_D*y_F^2+3^{1/2}*x_D*x_K*y_C*y_F^2-3*3^{1/2}*x_D*x_K*y_C^2*y_F+3*3^{1/2}*x_E*x_J*y_C*y_F^2-3^{1/2}*x_E*x_J*y_C^2*y_F+2*3^{1/2}*x_E*x_K*y_C^2*y_E-3^{1/2}*x_F*x_J*y_C^2*y_E-3^{1/2}*x_F*x_K*y_C^2*y_D-3^{1/2}*x_C*x_K*y_E*y_F^2+2*3^{1/2}*x_D*x_J*y_E*y_F^2+2*3^{1/2}*$

$x_D*x_K*y_D*y_F^2-3*3^{1/2}*x_E*x_K*y_C*y_F^2+3^{1/2}*x_E*x_K*y_C^2*y_F+3*3^{1/2}*x_F*x_J*y_C*y_F^2-2*3^{1/2}*x_F*x_J*y_C^2*y_F+3^{1/2}*x_F*x_K*y_C^2*y_E-2*3^{1/2}*x_D*x_K*y_E*y_F^2-3*3^{1/2}*x_F*x_K*y_C*y_F^2+2*3^{1/2}*x_F*x_K*y_C^2*y_F+4*3^{1/2}*x_J*x_K*y_C^2*y_D-4*3^{1/2}*x_J*x_K*y_C^2*y_E+4*3^{1/2}*x_J*x_K*y_C*y_F^2+4*3^{1/2}*x_J*x_K*y_C^2*y_F-4*3^{1/2}*x_J*x_K*y_D*y_F^2+4*3^{1/2}*x_J*x_K*y_E*y_F^2+8*3^{1/2}*x_C*x_D*x_J*y_D-8*3^{1/2}*x_C*x_D*x_J*y_E-8*3^{1/2}*x_C*x_D*x_K*y_D-4*3^{1/2}*x_C*x_E*x_J*y_D-2*3^{1/2}*x_C*x_F*x_J*y_C+4*3^{1/2}*x_D*x_E*x_J*y_C-2*3^{1/2}*x_C*x_D*x_J*y_F+8*3^{1/2}*x_C*x_D*x_K*y_E+4*3^{1/2}*x_C*x_E*x_J*y_E+4*3^{1/2}*x_C*x_E*x_K*y_D+6*3^{1/2}*x_C*x_F*x_J*y_D+2*3^{1/2}*x_C*x_F*x_K*y_C-4*3^{1/2}*x_D*x_E*x_K*y_C-4*3^{1/2}*x_D*x_F*x_J*y_C+2*3^{1/2}*x_C*x_D*x_K*y_F-2*3^{1/2}*x_C*x_E*x_J*y_F-4*3^{1/2}*x_C*x_E*x_K*y_E-6*3^{1/2}*x_C*x_F*x_J*y_E-6*3^{1/2}*x_C*x_F*x_K*y_D-6*3^{1/2}*x_D*x_F*x_J*y_D+4*3^{1/2}*x_D*x_F*x_K*y_C+4*3^{1/2}*x_E*x_F*x_J*y_C+2*3^{1/2}*x_C*x_E*x_K*y_F+4*3^{1/2}*x_C*x_F*x_J*y_F+6*3^{1/2}*x_C*x_F*x_K*y_E-8*3^{1/2}*x_D*x_E*x_J*y_F+6*3^{1/2}*x_D*x_F*x_J*y_E+6*3^{1/2}*x_D*x_F*x_K*y_D+6*3^{1/2}*x_E*x_F*x_J*y_D-4*3^{1/2}*x_E*x_F*x_K*y_C-4*3^{1/2}*x_C*x_F*x_K*y_F+8*3^{1/2}*x_D*x_E*x_K*y_F-4*3^{1/2}*x_D*x_F*x_J*y_F-6*3^{1/2}*x_D*x_F*x_K*y_E-6*3^{1/2}*x_E*x_F*x_J*y_E-6*3^{1/2}*x_E*x_F*x_K*y_D+4*3^{1/2}*x_D*x_F*x_K*y_F+4*3^{1/2}*x_E*x_F*x_J*y_F+6*3^{1/2}*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_J*x_K*y_D-8*3^{1/2}*x_D*x_J*x_K*y_C-4*3^{1/2}*x_E*x_F*x_K*y_F-8*3^{1/2}*x_C*x_J*x_K*y_E+8*3^{1/2}*x_E*x_J*x_K*y_C-8*3^{1/2}*x_C*x_J*x_K*y_F-8*3^{1/2}*x_D*x_J*x_K*y_F+8*3^{1/2}*x_E*x_J*x_K*y_F+4*3^{1/2}*x_J*y_C*y_D*y_F-4*3^{1/2}*x_J*y_C*y_E*y_F-4*3^{1/2}*x_K*y_C*y_D*y_F+4*3^{1/2}*x_K*y_C*y_E*y_F+24*x_C*x_D*x_F*x_J*x_K-24*x_C*x_E*x_F*x_J*x_K+4*x_C*x_D*x_J*y_C*y_D-4*x_C*x_D*x_J*y_C*y_E-4*x_C*x_D*x_K*y_C*y_D-8*x_C*x_E*x_J*y_C*y_D-4*x_C*x_D*x_J*y_C*y_F+4*x_C*x_D*x_K*y_C*y_E+8*x_C*x_E*x_J*y_C*y_E+8*x_C*x_E*x_K*y_C*y_D+10*x_C*x_D*x_J*y_D*y_F+4*x_C*x_D*x_K*y_C*y_F-4*x_C*x_E*x_J*y_C*y_F-8*x_C*x_E*x_K*y_C*y_E-2*x_D*x_F*x_J*y_C*y_D-10*x_C*x_D*x_J*y_E*y_F-10*x_C*x_D*x_K*y_D*y_F-2*x_C*x_E*x_J*y_D*y_F+4*x_C*x_E*x_K*y_C*y_F+2*x_D*x_F*x_J*y_C*y_E+2*x_D*x_F*x_K*y_C*y_D+10*x_E*x_F*x_J*y_C*y_D+10*x_C*x_D*x_K*y_E*y_F+2*x_C*x_E*x_J*y_E*y_F+2*x_C*x_E*x_K*y_D*y_F+4*x_D*x_F*x_J*y_C*y_F-2*x_D*x_F*x_K*y_C*y_E-10*x_E*x_F*x_J*y_C*y_E-10*x_E*x_F*x_K*y_C*y_D-2*x_C*x_E*x_K*y_E*y_F-8*x_D*x_F*x_J*y_D*y_F-4*x_D*x_F*x_K*y_C*y_F+4*x_E*x_F*x_J*y_C*y_F+10*x_E*x_F*x_K*y_C*y_E-8*x_C*x_J*x_K*y_C*y_D+8*x_D*x_F*x_J*y_E*y_F+8*x_D*x_F*x_K*y_D*y_F+4*x_E*x_F*x_J*y_D*y_F-4*x_E*x_F*x_K*y_C*y_F+8*x_C*x_J*x_K*y_C*y_E-8*x_D*x_F*x_K*y_E*y_F-4*x_E*x_F*x_J*y_E*y_F-4*x_E*x_F*x_K*y_D*y_F-16*x_C*x_J*x_K*y_C*y_F+4*x_E*x_F*x_K*y_E*y_F+16*x_C*x_J*x_K*y_D*y_F-8*x_D*x_J*x_K*y_C*y_F+16*x_F*x_J*x_K*y_C*y_D-16*x_C*x_J*x_K*y_E*y_F+8*x_E*x_J*x_K*y_C*y_F-16*x_F*x_J*x_K*y_C*y_E+16*x_F*x_J*x_K*y_C*y_F-8*x_F*x_J*x_K*y_D*y_F+8*x_F*x_J*x_K*y_E*y_F-4*3^{1/2}*x_C*x_D*x_E*x_J*y_C+4*3^{1/2}*x_C*x_D*x_E*x_K*y_C+6*3^{1/2}*x_C*x_D*x_F*x_J*y_D+8*3^{1/2}*x_C*x_D*x_E*x_J*y_F-6*3^{1/2}*x_C*x_D*x_F*x_J*y_E-6*3^{1/2}*x_C*x_D*x_F*x_K*y_D-6*3^{1/2}*x_C*x_E*x_F*x_J*y_D+8*3^{1/2}*x_D*x_E*x_F*x_J*y_C-8*3^{1/2}*x_C*x_D*x_E*x_K*y_F+6*3^{1/2}*x_C*x_D*x_F*x_K*y_E+6*3^{1/2}*x_C*x_E*x_F*x_J*y_E+6*3^{1/2}*x_C*x_E*x_F*x_K*y_D-8*3^{1/2}*x_D*x_E*x_F*x_K*y_C-6*3^{1/2}*x_C*x_E*x_F*x_K*y_E+8*3^{1/2}*x_C*x_D*x_J*x_K*y_C-4*3^{1/2}*x_D*x_E*x_F*x_J*y_F-8*3^{1/2}*x_C*x_E*x_J*x_K*y_C+4*3^{1/2}*x_D*x_E*x_F*x_K*y_F+8*3^{1/2}*x_C*x_D*x_J*x_K*y_F-8*3^{1/2}*x_D*x_F*x_J*x_K*y_C-8*3^{1/2}*x_C*x_E*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_C-8*3^{1/2}*x_D*x_F*x_J*x_K*y_F+8*3^{1/2}*x_E*x_F*x_J*x_K*y_F-4*3^{1/2}*x_C*x_J*y_C*y_D*y_F+4*3^{1/2}*x_C*x_J*y_C*y_E*y_F+4*3^{1/2}*x_C*x_K*y_C*y_D*y_F-2*3^{1/2}*x_D*x_J*y_C*y_D*y_F-4*3^{1/2}*x_C*x_K*y_C*y_E*y_F+2*3^{1/2}*x_D*x_J*y_C*y_E*y_F+2*3^{1/2}*x_D*x_K*y_C*y_D*y_F+2*3^{1/2}*x_E*x_J*y_C*y_D*y_F-2*3^{1/2}*x_D*x_K*y_C*y_E*y_F-2*3^{1/2}*x_E*x_J*y_C*y_E*y_F-2*3^{1/2}*x_E*x_K*y_C*y_D*y_F+4*3^{1/2}*x_F*x_J*y_C*y_D*y_F+2*3^{1/2}*x_E*x_K*y_C*y_E*y_F-4*3^{1/2}*x_F*x_J*y_C*y_E*y_F-4*3^{1/2}*x_F*x_K*y_C*y_D*y_F+4*3^{1/2}*x_F*x_K*y_C*y_E*y_F)/(2*(3*x_J-x_K)*(y_C+y_F-3^{1/2}*x_C+3^{1/2}*x_F+3^{1/2})*$

$(y_E-y_D+y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F+x_C*y_D-x_D*y_C-x_C*y_E+x_E*y_C-x_C*y_F+x_F*y_C-x_D*y_F+x_F*y_D+x_E*y_F-x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F)), (3*x_F*x_J-3*x_F*x_K+3*x_F^2*x_J-3*x_F^2*x_K-4*x_J*y_D^2-2*x_J*y_E^2+4*x_K*y_D^2+3*x_J*y_F^2+2*x_K*y_E^2-3*x_K*y_F^2-3*x_C*x_F^2*x_J+3*x_C^2*x_F*x_J+3*x_C*x_F^2*x_K-3*x_C^2*x_F*x_K+4*x_C*x_J*y_D^2+2*x_C*x_J*y_E^2-4*x_C*x_K*y_D^2-3*x_C*x_J*y_F^2-2*x_C*x_K*y_E^2+3*x_F*x_J*y_C^2+3*x_C*x_K*y_F^2-2*x_F*x_J*y_D^2-3*x_F*x_K*y_C^2-4*x_F*x_J*y_E^2+2*x_F*x_K*y_D^2+4*x_F*x_K*y_E^2+2*3^{1/2}*x_J*y_D-2*3^{1/2}*x_J*y_E-2*3^{1/2}*x_K*y_D+3^{1/2}*x_J*y_F+2*3^{1/2}*x_K*y_E-3^{1/2}*x_K*y_F-6*x_C*x_F*x_J+6*x_C*x_F*x_K+3*x_D*x_F*x_J-3*x_D*x_F*x_K-3*x_E*x_F*x_J+3*x_E*x_F*x_K+6*x_J*y_D*y_E+x_J*y_D*y_F-6*x_K*y_D*y_E+x_J*y_E*y_F-x_K*y_D*y_F-x_K*y_E*y_F-4*x_K*y_D*y_J+4*x_K*y_E*y_J+4*x_K*y_F*y_J-4*3^{1/2}*x_C*x_J*y_D+4*3^{1/2}*x_C*x_J*y_E+4*3^{1/2}*x_C*x_K*y_D-2*3^{1/2}*x_C*x_J*y_F-4*3^{1/2}*x_C*x_K*y_E-2*3^{1/2}*x_D*x_J*y_E+2*3^{1/2}*x_C*x_K*y_F-3^{1/2}*x_D*x_J*y_F+2*3^{1/2}*x_D*x_K*y_E+2*3^{1/2}*x_E*x_J*y_E-3^{1/2}*x_F*x_J*y_D+3^{1/2}*x_D*x_K*y_F+3^{1/2}*x_E*x_J*y_F-2*3^{1/2}*x_E*x_K*y_E-3^{1/2}*x_F*x_J*y_E+3^{1/2}*x_F*x_K*y_D-3^{1/2}*x_E*x_K*y_F+3^{1/2}*x_F*x_K*y_E-4*3^{1/2}*x_D*x_K*y_J+4*3^{1/2}*x_E*x_K*y_J-4*3^{1/2}*x_F*x_K*y_J-3*x_C*x_D*x_F*x_J+3*x_C*x_D*x_F*x_K+3*x_C*x_E*x_F*x_J-3*x_C*x_E*x_F*x_K-4*x_D*x_J*y_C*y_D-6*x_C*x_J*y_D*y_E+2*x_D*x_J*y_C*y_E+4*x_D*x_K*y_C*y_D+4*x_E*x_J*y_C*y_D-x_C*x_J*y_D*y_F+6*x_C*x_K*y_D*y_E-3*x_D*x_J*y_C*y_F-2*x_D*x_K*y_C*y_E-2*x_E*x_J*y_C*y_E-4*x_E*x_K*y_C*y_D+x_F*x_J*y_C*y_D-x_C*x_J*y_E*y_F+x_C*x_K*y_D*y_F+2*x_D*x_J*y_D*y_F+3*x_D*x_K*y_C*y_F+3*x_E*x_J*y_C*y_F+2*x_E*x_K*y_C*y_E+x_F*x_J*y_C*y_E-x_F*x_K*y_C*y_D+x_C*x_K*y_E*y_F-4*x_D*x_J*y_E*y_F-2*x_D*x_K*y_D*y_F-2*x_E*x_J*y_D*y_F-3*x_E*x_K*y_C*y_F+6*x_F*x_J*y_D*y_E-x_F*x_K*y_C*y_E+4*x_D*x_K*y_E*y_F+4*x_E*x_J*y_E*y_F+2*x_E*x_K*y_D*y_F-6*x_F*x_K*y_D*y_E-4*x_E*x_K*y_E*y_F+4*x_C*x_K*y_D*y_J-4*x_D*x_K*y_C*y_J-4*x_C*x_K*y_E*y_J+4*x_E*x_K*y_C*y_J-4*x_C*x_K*y_F*y_J+4*x_F*x_K*y_C*y_J-4*x_D*x_K*y_F*y_J+4*x_F*x_K*y_D*y_J+4*x_E*x_K*y_F*y_J-4*x_F*x_K*y_E*y_J+2*3^{1/2}*x_C^2*x_J*y_D-2*3^{1/2}*x_C^2*x_J*y_E-2*3^{1/2}*x_C^2*x_K*y_D+3^{1/2}*x_C^2*x_J*y_F+2*3^{1/2}*x_C^2*x_K*y_E+3^{1/2}*x_F^2*x_J*y_C-3^{1/2}*x_C^2*x_K*y_F-2*3^{1/2}*x_F^2*x_J*y_D-3^{1/2}*x_F^2*x_K*y_C+2*3^{1/2}*x_F^2*x_J*y_E+2*3^{1/2}*x_F^2*x_K*y_D-2*3^{1/2}*x_F^2*x_K*y_E+2*3^{1/2}*x_J*y_C^2*y_D-2*3^{1/2}*x_J*y_C*y_E^2-2*3^{1/2}*x_J*y_C^2*y_E-2*3^{1/2}*x_K*y_C^2*y_D+3^{1/2}*x_J*y_C*y_F^2+3^{1/2}*x_J*y_C^2*y_F+2*3^{1/2}*x_K*y_C*y_E^2+2*3^{1/2}*x_K*y_C^2*y_E-2*3^{1/2}*x_J*y_D*y_F^2-2*3^{1/2}*x_J*y_D^2*y_F-3^{1/2}*x_K*y_C*y_F^2-3^{1/2}*x_K*y_C^2*y_F+2*3^{1/2}*x_J*y_E*y_F^2+2*3^{1/2}*x_K*y_D*y_F^2+2*3^{1/2}*x_K*y_D^2*y_F-2*3^{1/2}*x_K*y_E*y_F^2+2*3^{1/2}*x_C*x_D*x_J*y_E+3^{1/2}*x_C*x_D*x_J*y_F-2*3^{1/2}*x_C*x_D*x_K*y_E-2*3^{1/2}*x_C*x_E*x_J*y_E+3^{1/2}*x_C*x_F*x_J*y_D-3^{1/2}*x_D*x_F*x_J*y_C-3^{1/2}*x_C*x_D*x_K*y_F-3^{1/2}*x_C*x_E*x_J*y_F+2*3^{1/2}*x_C*x_E*x_K*y_E+3^{1/2}*x_C*x_F*x_K*y_D-2*3^{1/2}*x_D*x_F*x_J*y_D+3^{1/2}*x_D*x_F*x_K*y_C+3^{1/2}*x_E*x_F*x_J*y_C+3^{1/2}*x_C*x_E*x_K*y_F-3^{1/2}*x_C*x_F*x_K*y_E+2*3^{1/2}*x_D*x_F*x_K*y_D+2*3^{1/2}*x_E*x_F*x_J*y_D-3^{1/2}*x_E*x_F*x_K*y_C-2*3^{1/2}*x_E*x_F*x_K*y_D+4*3^{1/2}*x_C*x_D*x_K*y_J-4*3^{1/2}*x_C*x_E*x_K*y_J+4*3^{1/2}*x_C*x_F*x_K*y_J-4*3^{1/2}*x_D*x_F*x_K*y_J+4*3^{1/2}*x_E*x_F*x_K*y_J+2*3^{1/2}*x_J*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_D*y_F-2*3^{1/2}*x_K*y_C*y_D*y_E+3^{1/2}*x_J*y_C*y_E*y_F-3^{1/2}*x_K*y_C*y_D*y_F+2*3^{1/2}*x_J*y_D*y_E*y_F-3^{1/2}*x_K*y_C*y_E*y_F-2*3^{1/2}*x_K*y_D*y_E*y_F+4*3^{1/2}*x_K*y_C*y_D*y_J-4*3^{1/2}*x_K*y_C*y_E*y_J+4*3^{1/2}*x_K*y_C*y_F*y_J-4*3^{1/2}*x_K*y_D*y_F*y_J+4*3^{1/2}*x_K*y_E*y_F*y_J)/(2*(3*x_J-x_K)*(y_E-y_D+y_F-3^{1/2}*x_D+3^{1/2}*x_E-3^{1/2}*x_F+x_C*y_D-x_D*y_C-x_C*y_E+x_E*y_C-x_C*y_F+x_F*y_C-x_D*y_F+x_F*y_D+x_E*y_F-x_F*y_E+3^{1/2}*x_C*x_D-3^{1/2}*x_C*x_E+3^{1/2}*x_C*x_F-3^{1/2}*x_D*x_F+3^{1/2}*x_E*x_F+3^{1/2}*y_C*y_D-3^{1/2}*y_C*y_E+3^{1/2}*y_C*y_F-3^{1/2}*y_D*y_F+3^{1/2}*y_E*y_F))).$

□

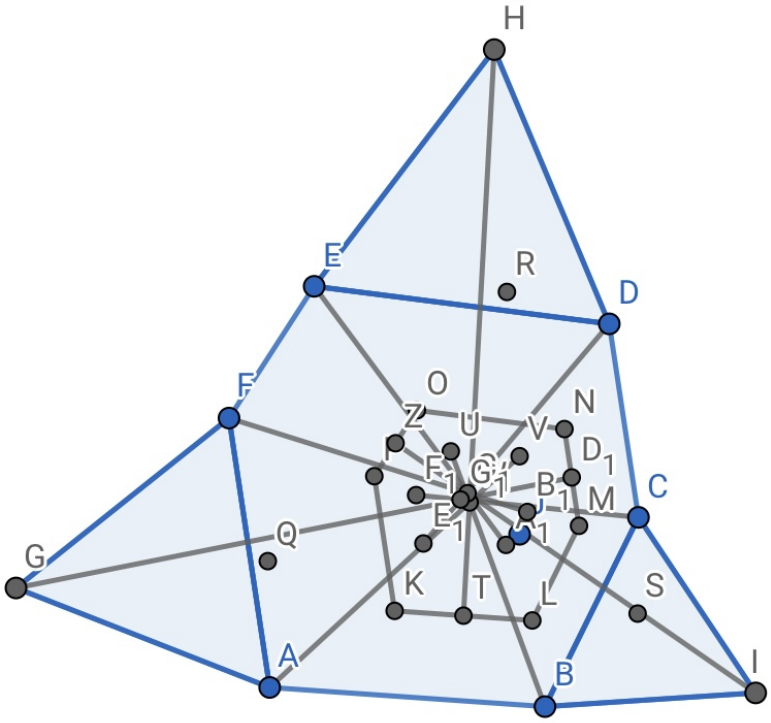

Figure 1. Illustration of theorem 2.1.

References

[1] Humenberger, H., Schuppar, B., De Villiers, M., Global Journal of Advanced Research on Classical and Modern Geometries ISSN: 2284-5569, Vol.12, (2023), Issue 1, pp.158-168

[2] Warren, B.L., Generalization of the Triangle Centroid and the Van Lamoen Circle, International Journal of Computer Discovered Mathematics, Vol. 9, Paper 13, (2024), pp. 44-53.

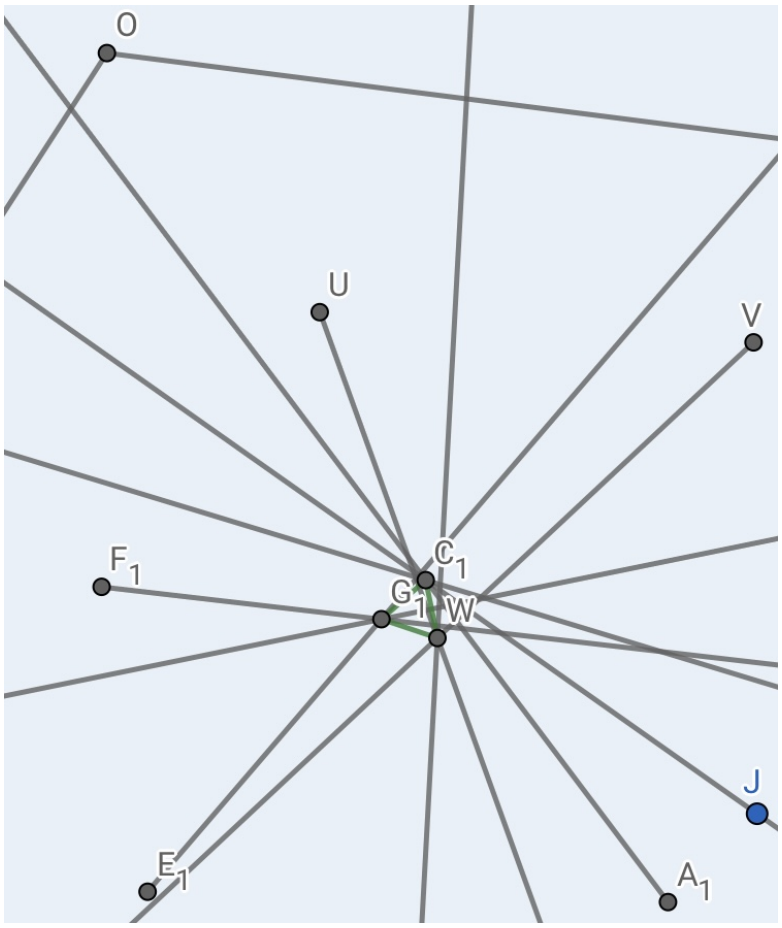

FIGURE 2. Figure 1 zoomed in.

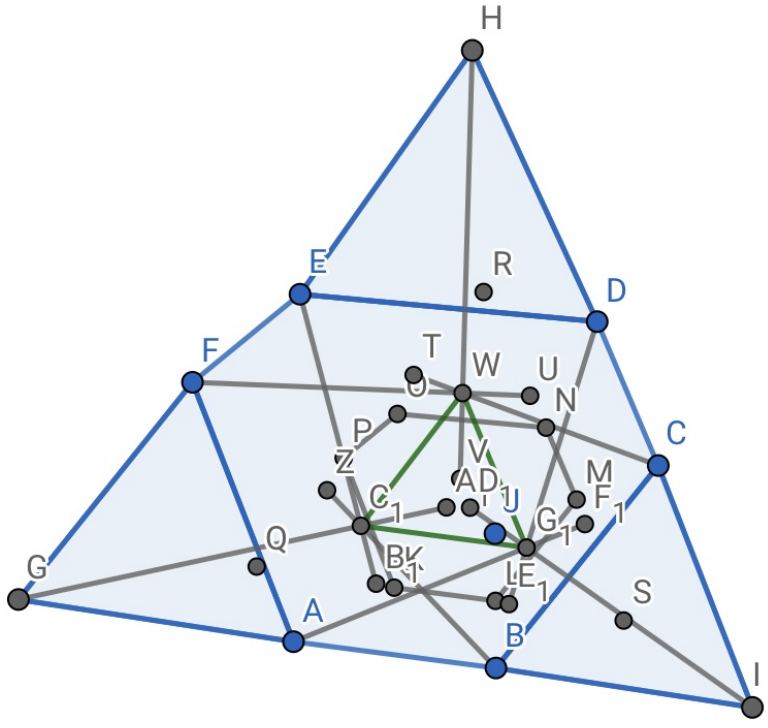

FIGURE 3. Illustration of theorem 2.2.

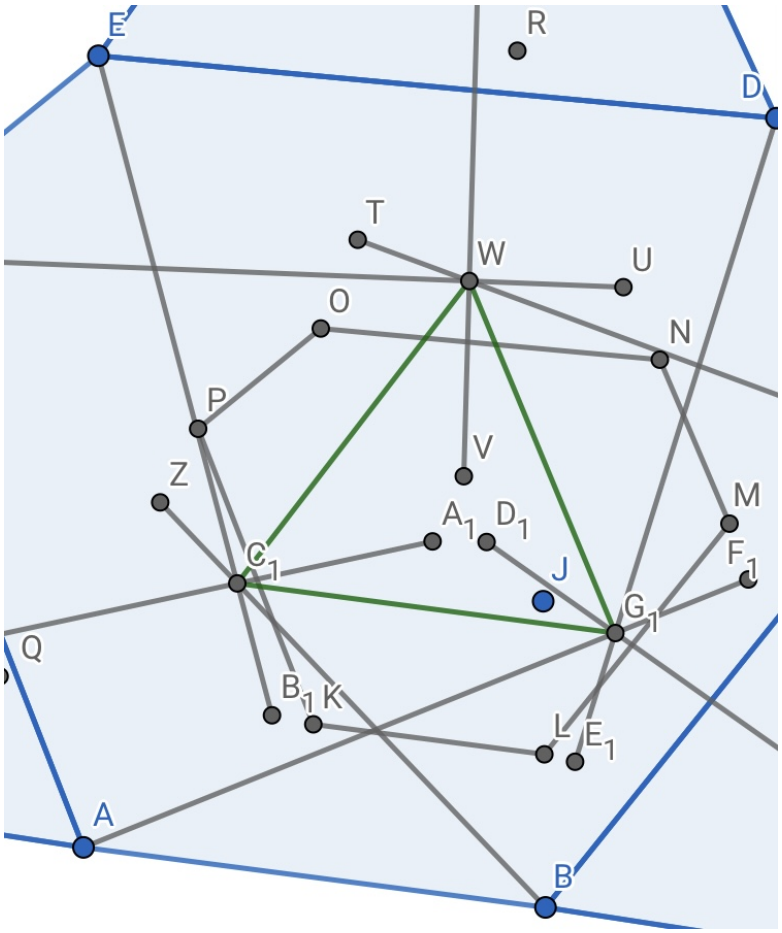

Figure 4. Figure 3 zoomed in.

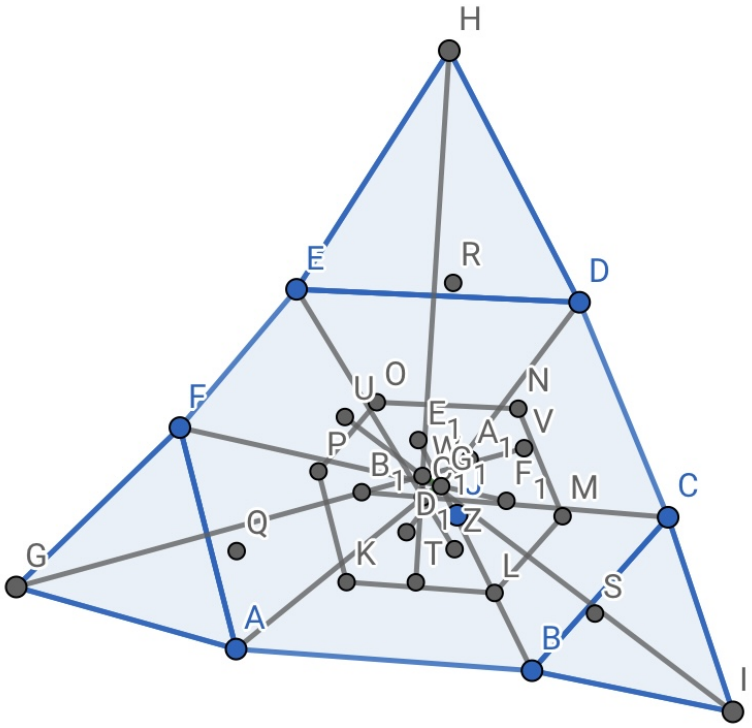

Figure 5. Illustration of theorem 2.3.

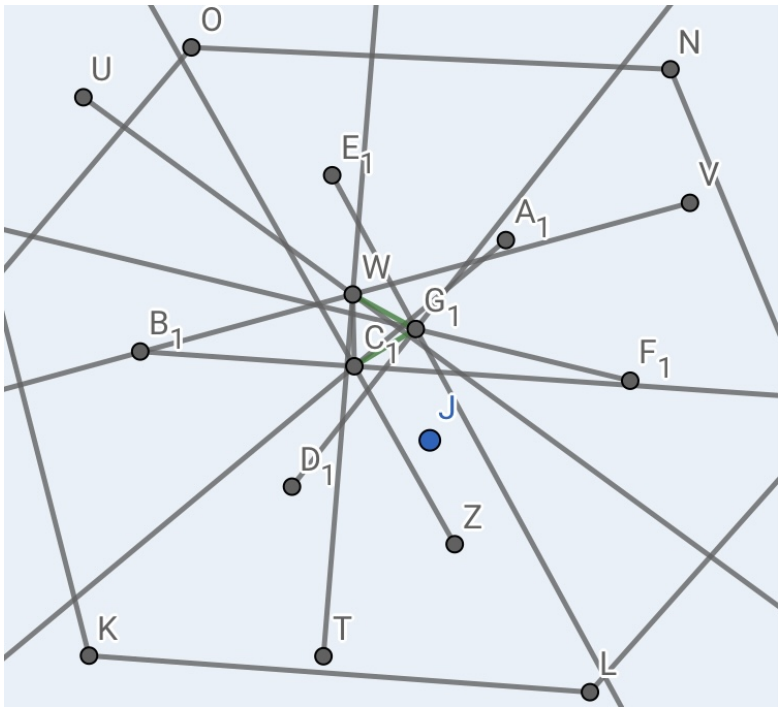

FIGURE 6. Figure 5 zoomed in.