

**Transformacja
met. Helmerta**

x1	y1	x2	y2
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Punkty dostosowania

1	5856,43	4193,45	34804,86	43569,9
2	4500,95	5852,52	33376,42	45166,57
3	646,74	3746,1	29620,48	42889,6
Sumy	11004,12	13792,07	97801,76	131626,07

X1s	Y1s	X2s	Y2s
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Bieguny S	3668,04	4597,356667	32600,58667	43875,35667
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	dx1	dy1	dx2	dy1	s1	s2	s3	s4	sm	
Przyrosty	1	2188,39	-403,9066667	2204,273333	-305,4566667	215446,9955	-6415,384222	34758,92783	-39764,61133	4952191,387
od biegunów	2	832,91	1255,163333	775,8333333	1291,213333	30026,4055	-71640,53919	-47539,72643	45248,63817	2269174,061
	3	-3021,3	-851,2566667	-2980,106667	-985,7566667	406364,85	-35066,09962	-124457,418	114494,0217	9852891,603
sumy		0	-2,27374E-12	0	0	651838,251	-113122,023	-137238,2166	119978,0485	17074257,05

Współczynniki

T1	0,044801965
Z1	-0,001010888
X01	29142,22526
Y01	39118,31201

Punkty przeliczane

1	4567,89	1234,56	33650,18692	40556,27446
2	5856,43	4193,45	34804,86026	43569,90248
3	4500,95	5852,52	33376,4209	45166,56717
4	2831,21	5210,47	31737,13393	44450,35858
5	646,74	3746,1	29620,47884	42889,60035
6	1925,92	1529,76	30997,66212	40732,8106

Wzory obliczeń

$$s1=s1+dx1*(dy2-dy1);$$

$$// s1=[dx1*(dy2-dy1)]$$

$$s2=s2+dy1*(dx2-dx1);$$

$$// s2=[dy1*(dx2-dx1)]$$

$$sm=sm+dx1*dx1+dy1*dy1;$$

$$// sm=[dx1^2+dy1^2]$$

$$s3=s3+dx1*(dx2-dx1);$$

$$// s3=[dx1*(dx2-dx1)]$$

$$s4=s4+dy1*(dy2-dy1);$$

$$// s4=[dy1*(dy2-dy1)]$$

$$sdx1=sdx1+dx1;$$

$$// [dx1]$$

$$sdy1=sdy1+dy1;$$

$$// [dy1]$$

$$sdx2=sdx2+dx2;$$

$$// [dx2]$$

$$sdy2=sdy2+dy2;$$

$$// [dy2]$$

$$T1 = (s1 - s2) / sm;$$

$$Z1 = (s3 + s4) / sm;$$

$$X01 = x2s - x1s + y1s*t1 - x1s*z1;$$

$$Y01 = y2s - y1s - x1s*t1 - y1s*z1;$$

Przeliczenie współrzędnych

$$X3 = X1 - Y1*T1 + X1*Z1 + X01 = X01 + (1+Z1)*X1 - T1*Y1$$

$$Y3 = Y1 + X1*T1 + Y1*Z1 + Y01 = Y01 + (1+Z1)*Y1 + T1*X1$$