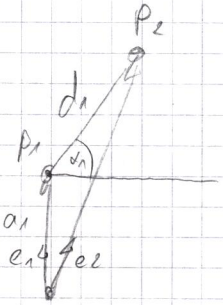
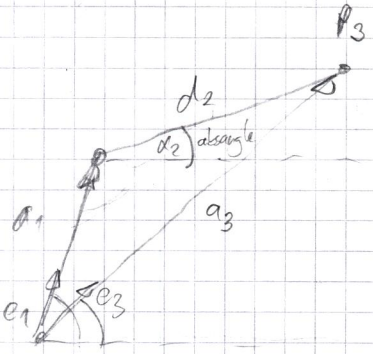




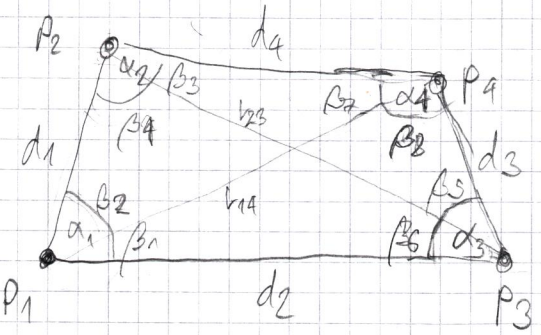
$\alpha_1 = \beta_1 + \beta_2$

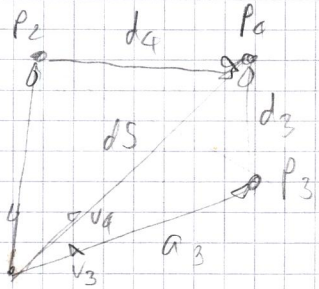
$\alpha_2 = \beta_3 + \beta_4$

$a_3 = \beta_5 + \beta_6$

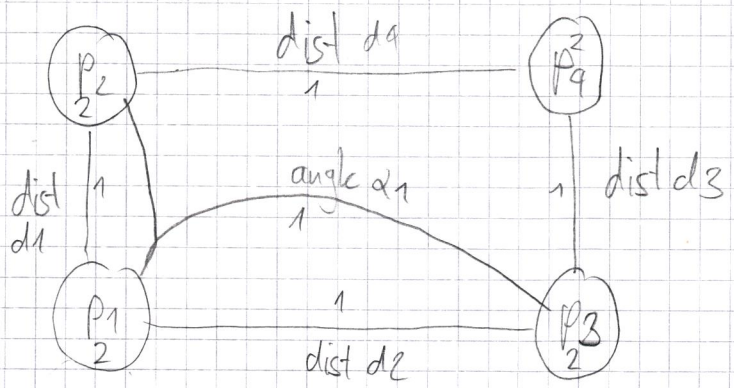
$\alpha_4 = \beta_7 + \beta_8$

$-\alpha_2 + \beta_3 + \beta_4 = 0$





rigid planar figure:

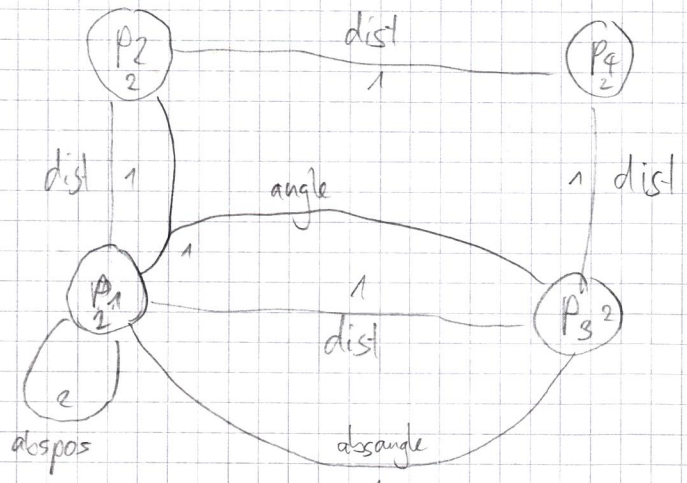


$\sum nodes = 8 = \sum w(v)$

$\sum edges = 5 = \sum w(e)$

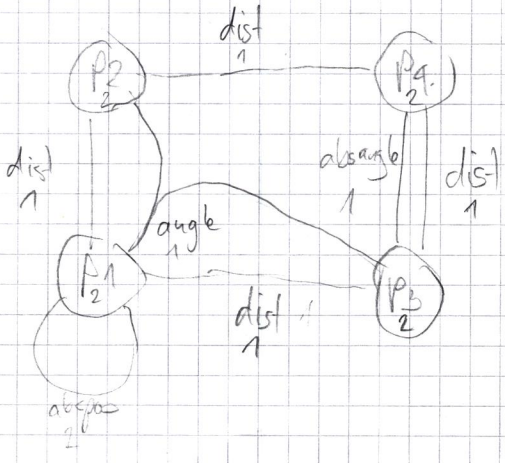
$\sum w(v) - \sum w(e) = 3$

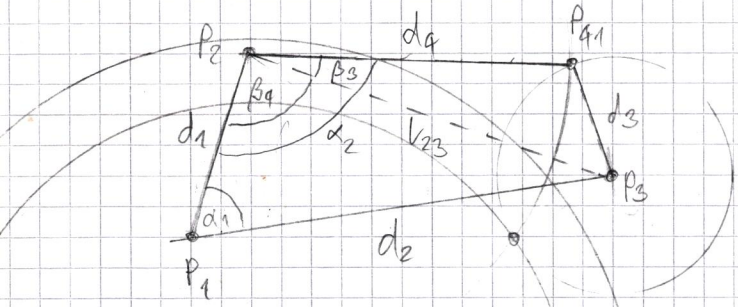
fixed with respect to global coordinate system:

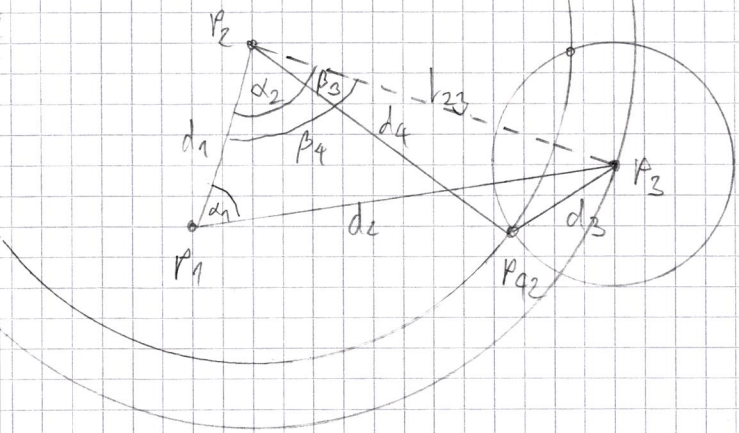


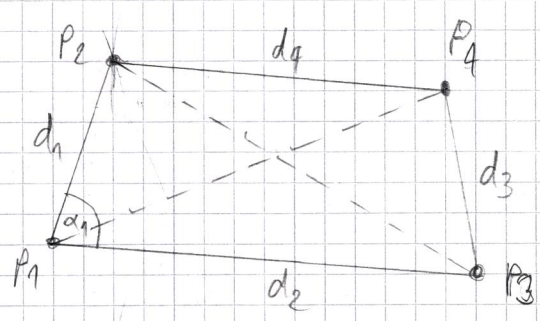
$\sum w(v) - \sum w(e) =$

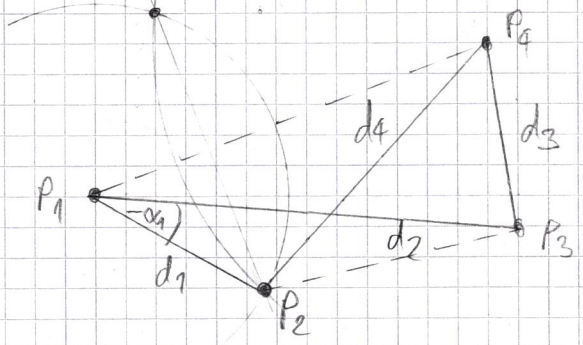
$8 - 8 = 0$

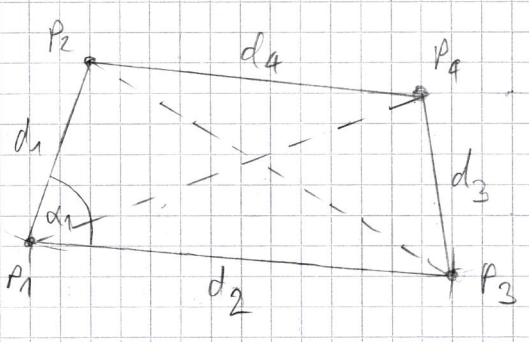


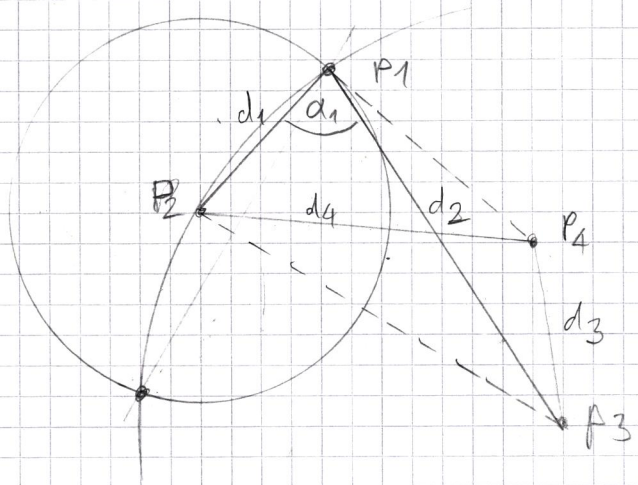

P2
d4
P41
β4
β3
d1
α2
V23
d3
P3
α1
d2
P1

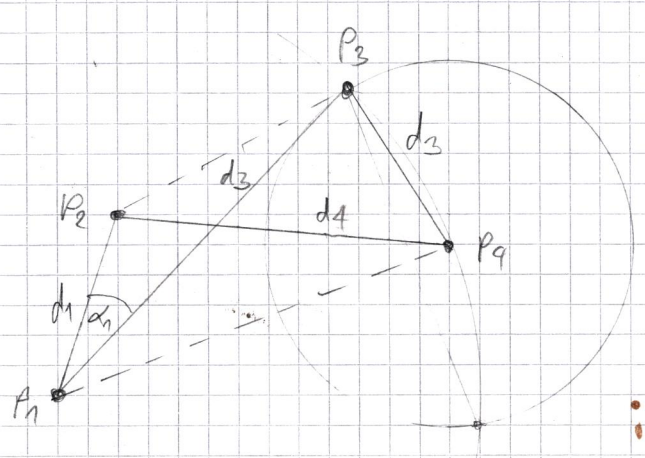

P2
α2
β3
V23
d1
d4
β4
P3
α1
d2
d3
P1
P42


P2
d4
P4
d1
d3
α1
P1
d2
P3


P4
d4
d3
P1
α1
d2
P3
d1
P2


P2
d4
P4
d1
d3
α1
P1
d2
P3


P1
d1
α1
P2
d4
d2
P4
d3
P3


P3
d3
d3
P2
d4
P4
d1
α1
P1