

Adj. of Geospatial Obs. HW #4
 assigned Wed, 19 Sep 2012, due Wed, 26 Sep

SOLVE BOTH PROBLEMS USING MATRIX LEAST SQUARES

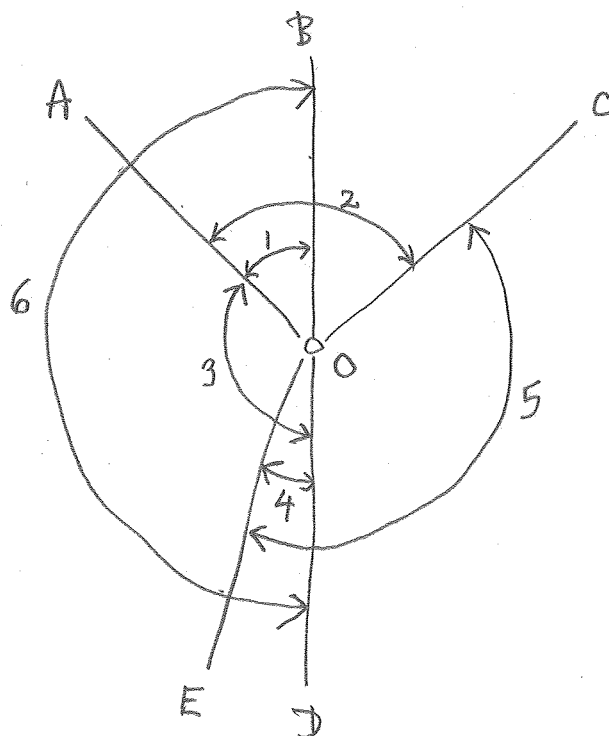
1.

<u>X</u>	<u>Y</u>	<u>x</u>	<u>y</u>	<u>$\sigma_x = \sigma_y$</u>
1.00	1.00	3.80	4.10	0.1
5.00	1.00	9.72	3.34	0.1
5.00	5.00	10.74	9.19	0.1
1.00	5.00	4.85	10.10	0.1
3.00	3.00	7.24	6.57	0.1

$$\begin{bmatrix} x \\ y \end{bmatrix} = \lambda \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix} \begin{bmatrix} X \\ Y \end{bmatrix} + \begin{bmatrix} t_x \\ t_y \end{bmatrix}$$

Find parameters λ , θ , t_x , and t_y of the 4-parameter transformation. X, Y constant, x, y observed. Use Indirect Observations

2. Adjust the angle figure using Observations Only



$\angle AOB = \angle BOC$!

#	(deg) <u>obs</u>	(deg) <u>σ</u>
1	50.44	0.5
2	99.43	0.5
3	132.47	0.5
4	17.43	0.7
5	142.94	0.7
6	184.01	0.7