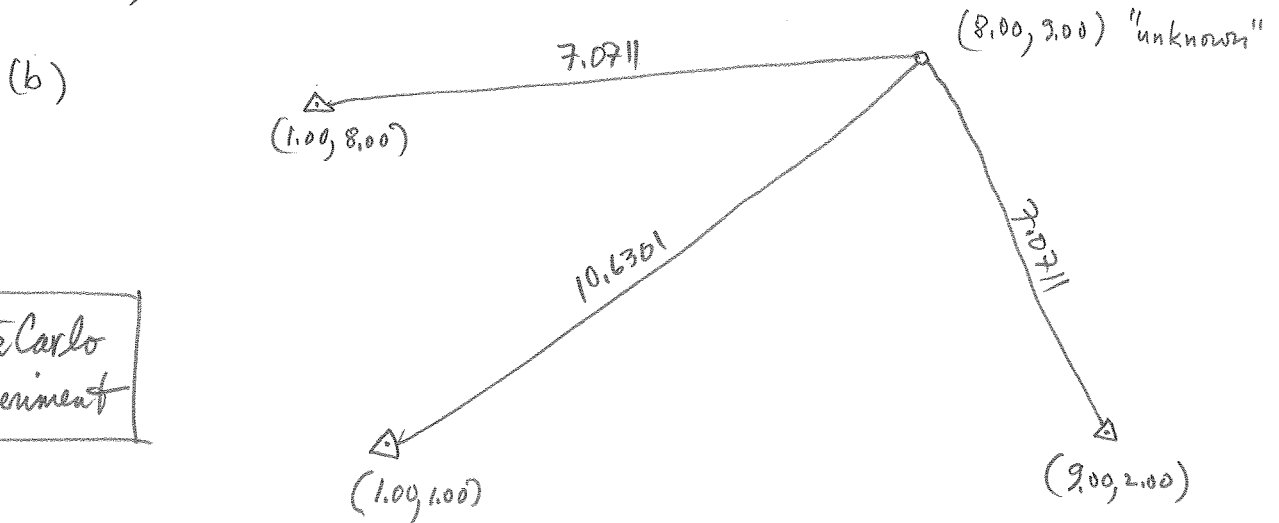
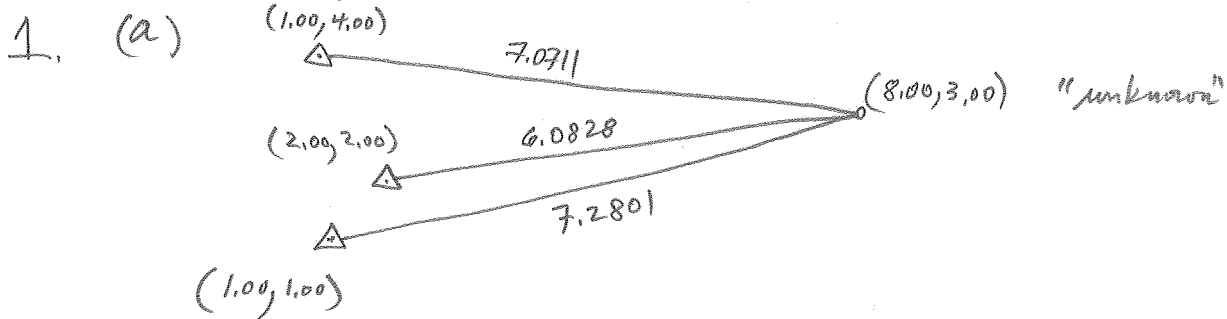


CE 597 Adj. Geospa. Obs. Homework 4  
 assigned 9 Oct, 2015, due Mon. 19<sup>th</sup>

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Monte Carlo  
 Experiment

Indirect obs. problem (like HW3). 3 CP's, 1 unknown point.  $\sigma_{\text{dist}} = 0.1$ .

Seed `rng()` with integer = last 2 digits of student ID, for each of (a) & (b)

- For each of (a) & (b) generate 5000 LS solutions, each time perturbing "perfect" observations with PRN's,  $\sigma = 0.1$ .

- Make scatter plot of  $X, Y$  (remember axis equal)

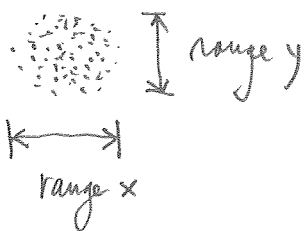
- find  $\bar{X}, \bar{Y}$

- find displacements (by trial and error or grid search)  $dx, dy$  such that

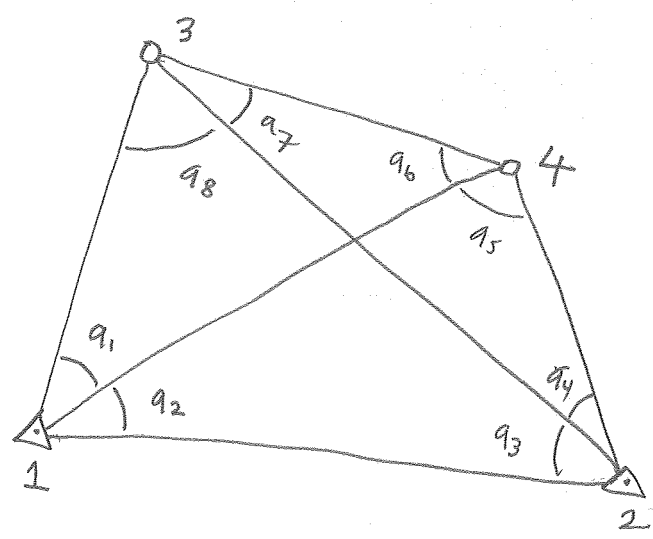
$\bar{X} \pm dx$  contains 90% of points

$\bar{Y} \pm dy$  contains 90% of points

- show



2.



	X	Y
1.	100.00	1020.00
2.	200.00	1010.00

(a) Solve the LS problem for coordinates of points 3 and 4. Solve by indirect observations.  $\sigma_a = .0286$  deg. Note that it is a minimally constrained problem.

- $a_1$  48.537 deg.
- $a_2$  37.698
- $a_3$  32.158
- $a_4$  33.708
- $a_5$  76.404
- $a_6$  40.145
- $a_7$  29.772
- $a_8$  61.538

(b) extra credit (not required!) ignore CP's and solve for shape of figure by observations only. Most of the condition equations are simple angle sums. But one must involve a length computed 2 ways, being equal.