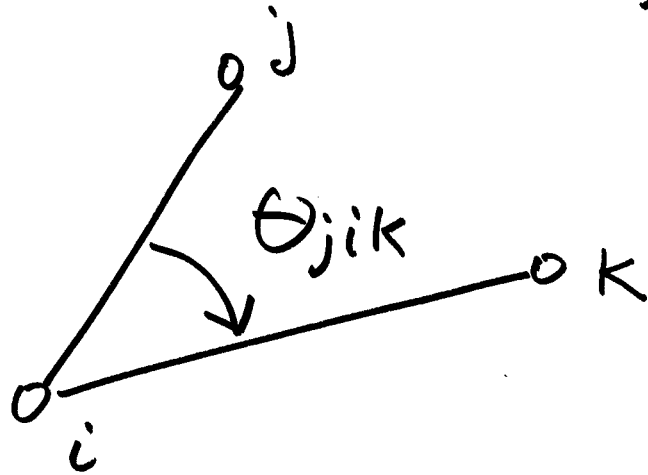


$$B = \left[\frac{\partial F}{\partial x_i} \quad \frac{\partial F}{\partial y_i} \quad \frac{\partial F}{\partial x_j} \quad \frac{\partial F}{\partial y_j} \quad \frac{\partial F}{\partial x_k} \quad \frac{\partial F}{\partial y_k} \right]$$



$$f = (-F_\theta)$$

$$\frac{\partial F}{\partial x_i} = \frac{y_k - y_i}{D_{ik}^2} - \frac{y_j - y_i}{D_{ij}^2}$$

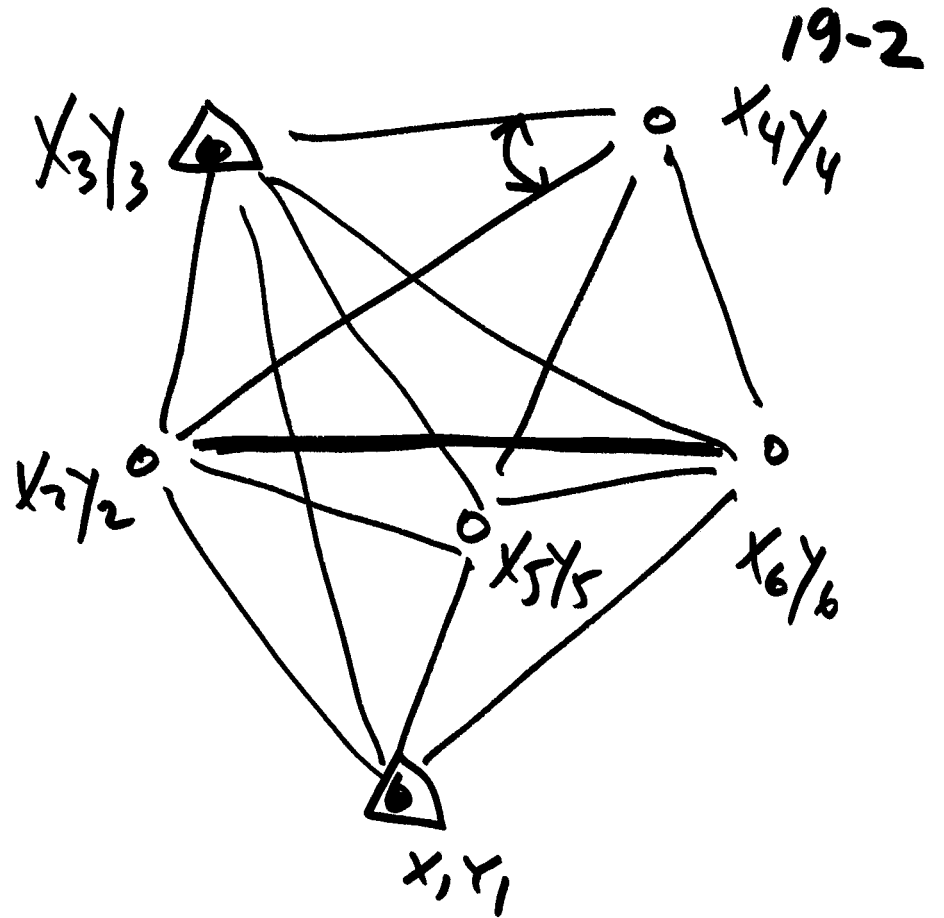
$$\frac{\partial F}{\partial y_i} = -\frac{(x_k - x_i)}{D_{ik}^2} + \frac{(x_j - x_i)}{D_{ij}^2}$$

$$\frac{\partial F}{\partial x_j} = \frac{Y_j - Y_i}{D_{ij}^2}$$

$$\frac{\partial F}{\partial y_j} = -\frac{(x_j - x_i)}{D_{ij}^2}$$

$$\frac{\partial F}{\partial x_k} = -\frac{(Y_k - Y_i)}{D_{ik}^2}$$

$$\frac{\partial F}{\partial Y_k} = \frac{(x_k - x_i)}{D_{ik}^2}$$



$$B = \begin{matrix} & x_1 & y_1 & x_2 & y_2 & x_3 & y_3 & x_4 & y_4 & x_5 & y_5 & x_6 & y_6 \\ \left[\begin{array}{cccccccccccc} \underline{0} & \underline{0} & \boxed{\text{shaded}} & \boxed{\text{shaded}} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & \underline{0} & \boxed{\text{shaded}} & \boxed{\text{shaded}} \end{array} \right] \end{matrix}$$

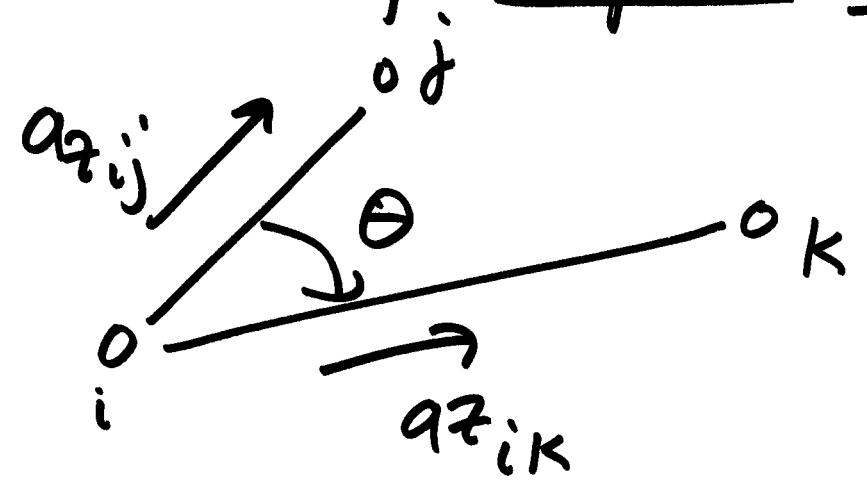
example ↑ for distance 2 → 6

$$\left[\begin{array}{cccccccccccc} 0 & 0 & \boxed{\text{shaded}} & \boxed{\text{shaded}} & \boxed{\text{shaded}} & \boxed{\text{shaded}} & \boxed{\text{shaded}} & \boxed{\text{shaded}} & 0 & 0 & 0 & 0 \end{array} \right]$$

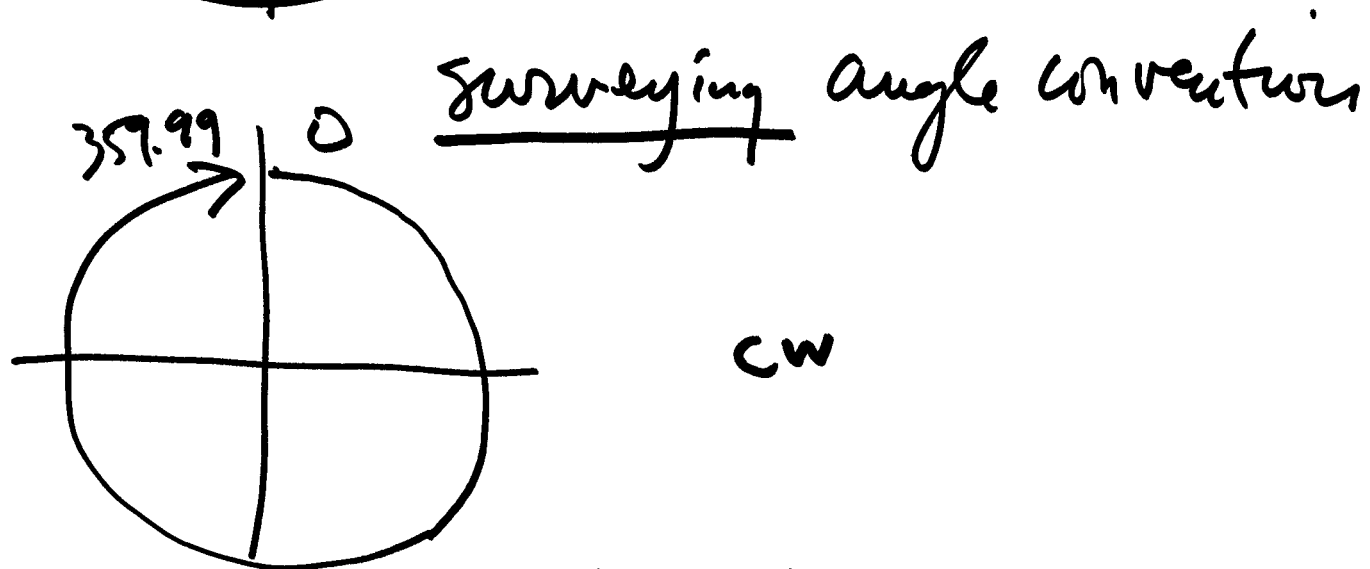
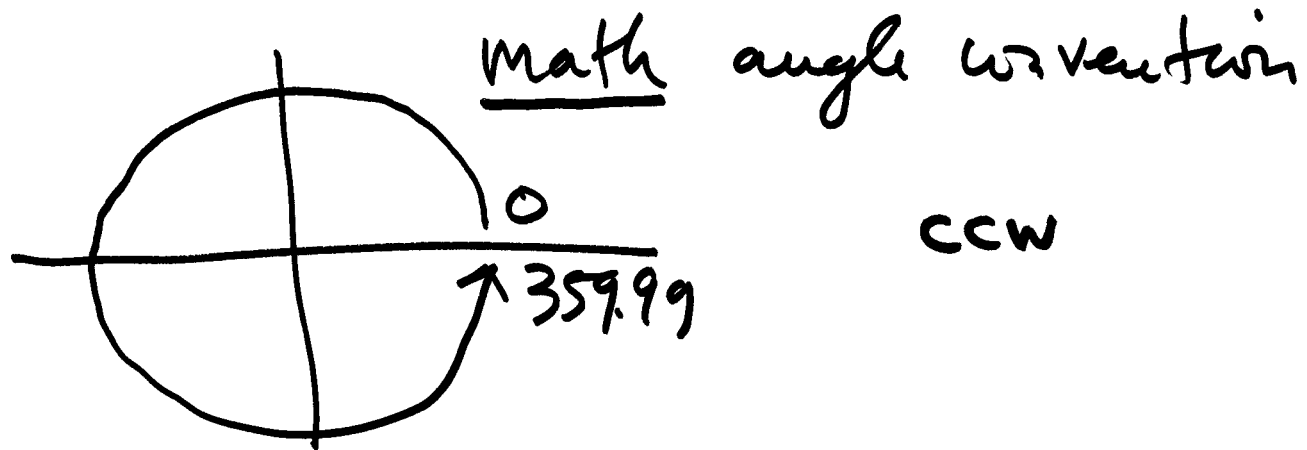
angle @ 4 from 2 → 3

$\boxed{\text{shaded}} = \text{non zero}$
 $\square = \text{zero}$

evaluating computed angle:



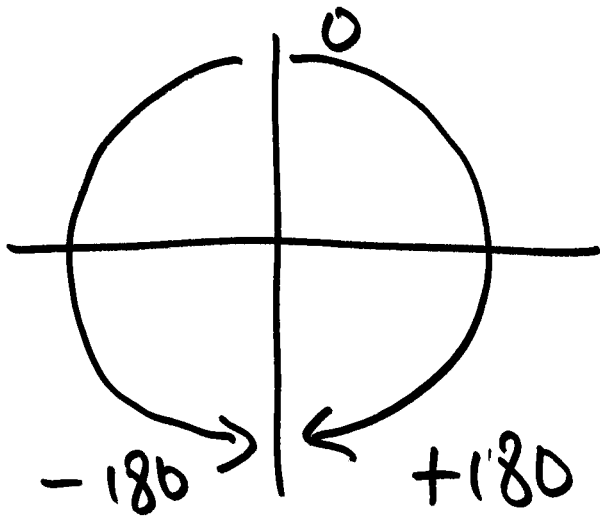
$$\Theta = az_{ik} - az_{ij}$$



matlab atan2 function

0 → +180

0 → -180

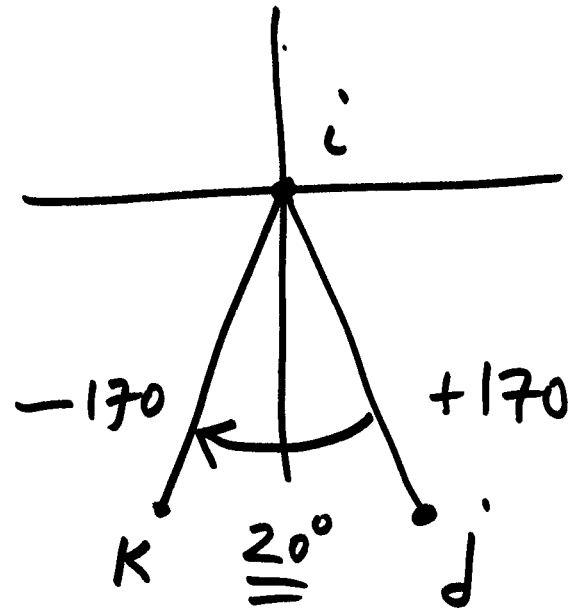


$$az_{ik} - az_{ij}$$

$$-170 - 170 = -340$$

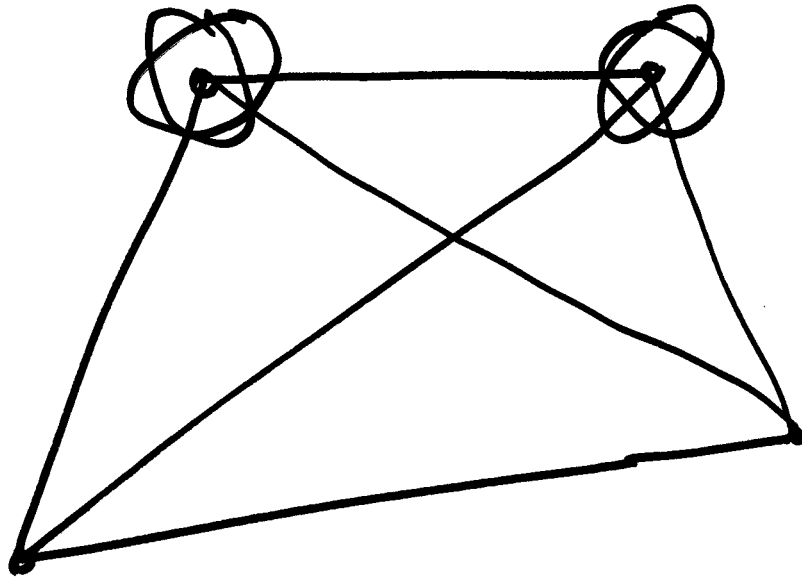
test: if az difference < 0
 then diff = diff + $\frac{360^\circ}{2\pi \text{ Rad.}}$

$$\text{atan2}(\Delta x, \Delta y)$$



← must modify raw
 azimuth difference
 if crossing angle
 discontinuity

19-6

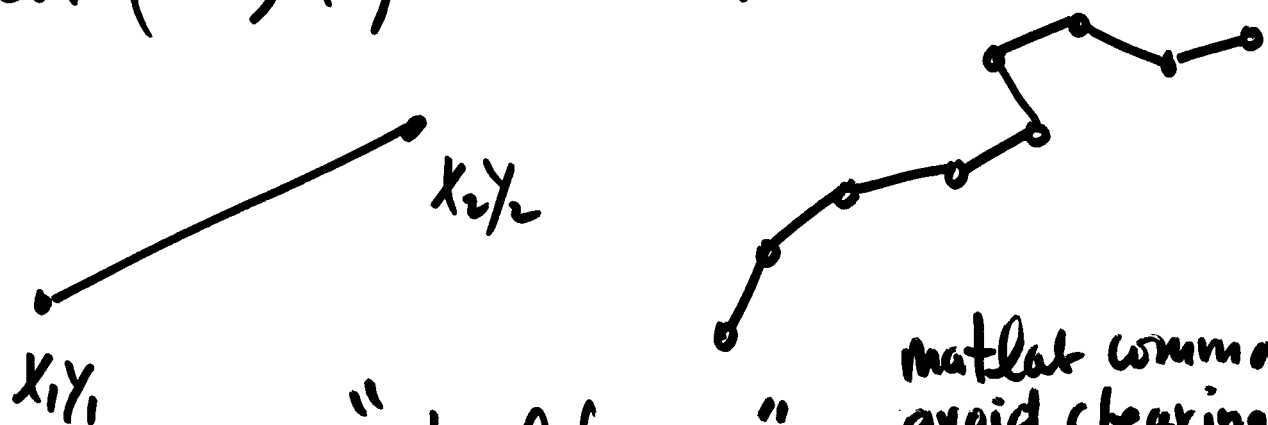


plot network
+
error regions
for HW 4

19-7

$\text{plot}(X, Y, '*r')$
[x_1, x_2], [y_1, y_2]
color
point symbol

$\text{plot}(X, Y, '-b')$
line symbol
color
[$x_1, x_2, x_3, x_4, \dots, x_n$]
[$y_1, y_2, y_3, y_4, \dots, y_n$]



"hold on" — matlab command to avoid clearing the plot