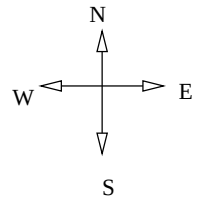
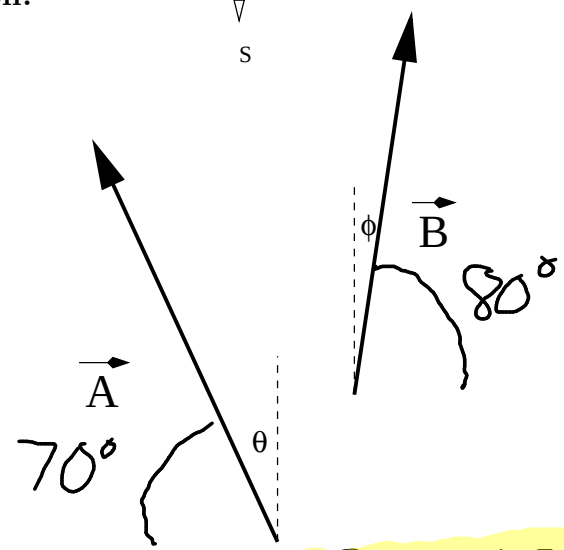
Quiz 1 – PH241 **Name**_____ ☐ **Pledged**

Given: $|\vec{A}| = 10.0, |\vec{B}| = 8.0$, $\theta = 20.^o$, and $\phi = 10^o$. Let $\vec{C} = \vec{A} - \vec{B}$.
A. Find the magnitude of $\vec{C}$
B. Find the direction of $\vec{C}$ relative to north.
C. Write $\vec{C}$ in component form.
D. Draw $\vec{C} = \vec{A} - \vec{B}$ in graphical form.

For full credit draw a detailed picture of calculation!

For a general vector $|\vec{D}| = \sqrt{D_x^2 + D_y^2}$
and $\sin\theta_D = \frac{\text{opp.}}{\text{hyp.}}$, $\cos\theta_D = \frac{\text{adj.}}{\text{hyp.}}$, $\tan\theta_D = \frac{\text{opp.}}{\text{adj.}}$





$A_x = -10\cos 70^\circ = -3.42$

$A_y = +10\sin 70^\circ = +9.40$

$B_x = +8\cos 80^\circ = 1.39$

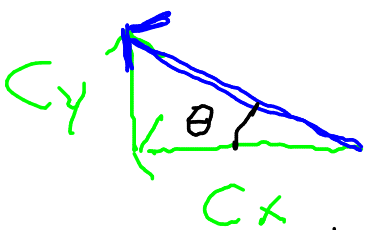
$B_y = +8\sin 80^\circ = 7.88$

$C_x = A_x - B_x = -4.81$

$C_y = A_y - B_y = +1.52$

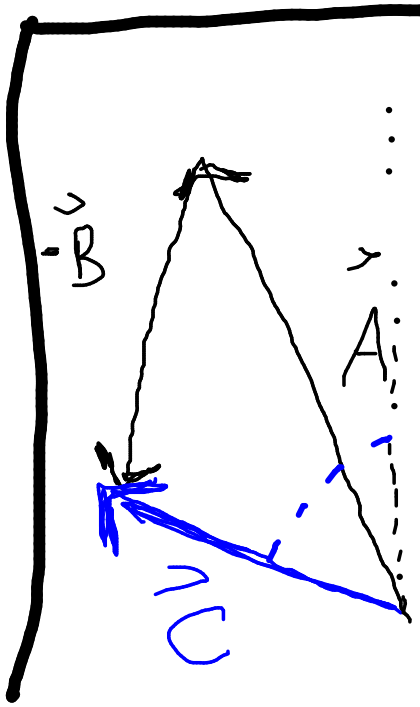
(A) $C = \sqrt{C_x^2 + C_y^2} = 5.04$

(B)



$\theta = \tan^{-1}\frac{C_y}{C_x}$

$\theta = 17.5^\circ$



82.5° west of North