Problem 3.19

The polar notation presentation of our three vectors is:

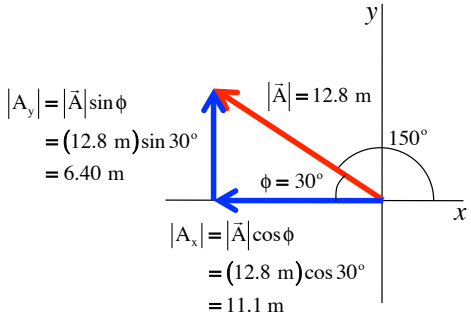
$$\vec{A} = (12.8\text{ m})\angle 150^\circ$$

$$\vec{B} = (3.30\text{ cm})\angle 60^\circ$$

$$\vec{C} = (22.0\text{ in})\angle 215^\circ$$

Drawing a quick graph always seems to help visualize the situation. Unfortunately, each vector has different units which means we will have to do each graph separately.

a.) $\vec{A} = (12.8\text{ m})\angle 150^\circ$



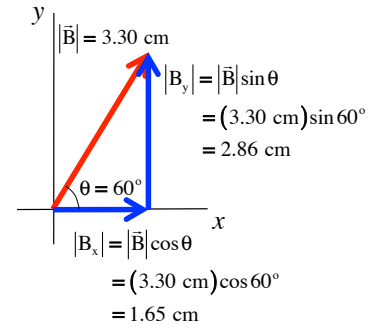
The only thing that is tricky about using a "convenient triangle" in determining the information you need is that in most cases you will have to put the appropriate sign in *manually*. In this case, the actual x-component is in the *negative* direction, so the solution (in *unit vector notation*) looks like:

$$\vec{A} = \left(-11.1\hat{i} + 6.40\hat{j}\right)\text{m}$$

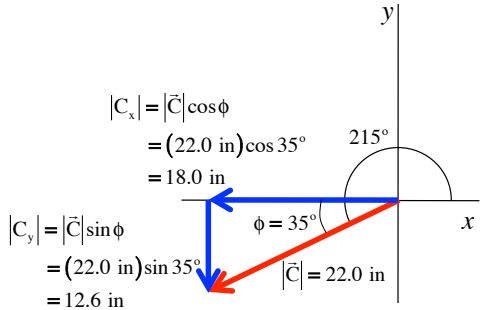
b.) $\vec{B} = (3.30\text{ cm})\angle 60^\circ$

In this case, all the components are *positive*, so we can write:

$$\vec{B} = \left(1.65\hat{i} - 2.86\hat{j}\right)\text{cm}$$



c.) $\vec{C} = (22.0\text{ in})\angle 215^\circ$



Again, manually inserting the appropriate signs, we get:

$$\vec{C} = \left(-18.0\hat{i} - 12.6\hat{j}\right)\text{in}$$