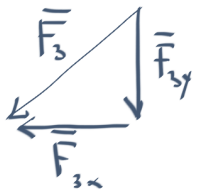
- Since $\vec{F}_3$ is directed SW and has a magnitude of 5 lbs, we can find the components of $\vec{F}_3$ as follows

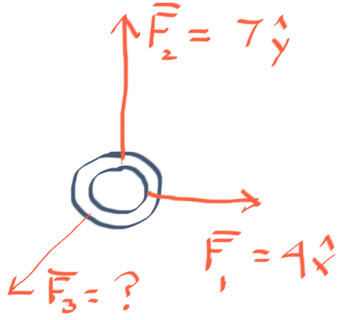


45-45-90 triangle

$$\frac{|\vec{F}_{3y}|}{|\vec{F}_3|} = \frac{1}{\sqrt{2}} \Rightarrow |\vec{F}_{3y}| = \frac{5}{\sqrt{2}} \text{ lbs}$$

$$\frac{|\vec{F}_{3x}|}{|\vec{F}_3|} = \frac{1}{\sqrt{2}} \Rightarrow |\vec{F}_{3x}| = \frac{5}{\sqrt{2}} \text{ lbs}$$

So: $\vec{F}_3 = -\frac{5}{\sqrt{2}} \text{lbs}\,\hat{x} - \frac{5}{\sqrt{2}} \text{lbs}\,\hat{y}$



- Now, what is the net force on the ring? Just add components of the three forces.

$$\vec{F}_{net} = \left(4 - \frac{5}{\sqrt{2}}\right)\hat{x} + \left(7 - \frac{5}{\sqrt{2}}\right)\hat{y}$$

$$\boxed{\vec{F}_{net} = (0.46 \text{ lbs})\,\hat{x} + (3.46 \text{ lbs})\,\hat{y}}$$

- What is the magnitude of this net force?

$$|\vec{F}_{net}| = \sqrt{F_{net,x}^2 + F_{net,y}^2}$$

$$= \sqrt{(0.46)^2 + (3.46)^2}$$

$$\boxed{F_{net} = 3.50 \text{ lbs}}$$

- Finally, what is the direction of the net force? $\theta = \arctan\left(\frac{3.46}{0.46}\right)$ above x-axis.

$\theta =$ $\boxed{82^\circ \text{ above x-axis}}$