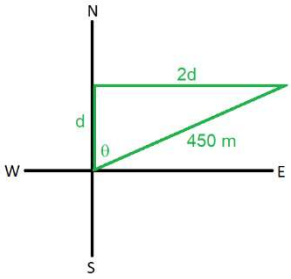
HW1-3)



Let's make a coördinate system for reference, perhaps a compass rose. Then, we have the motions mapped out in the figure. Since we have a right triangle, we can make use of some trig relationships.

$$\tan\theta = \frac{opp}{adj} = \frac{2d}{d} = 2 \quad \rightarrow \quad \theta = \arctan(2) = 63.4^{o} \ ,$$

specifically, 63.4° East of North.

Now that we have more information, we have some choices.

$$\cos\theta = \frac{\text{adj}}{\text{hyp}} = \frac{\text{d}}{450} \quad \rightarrow \quad \text{d} = 450\cos\theta = 450\cos(63.4^{\text{o}}) = 201.5\ \text{m} \text{ and } 2\text{d} = 403\ \text{m} \ .$$

Or,

$$\text{c}^2 = \text{a}^2 + \text{b}^2 \quad \rightarrow \quad 450^2 = \text{d}^2 + (2\text{d})^2 = 5\text{d}^2 \quad \rightarrow \quad \text{d} = \sqrt{\frac{450^2}{5}} = 201.3\ \text{m} \text{ and } 2\text{d} = 402.6\ \text{m} \ .$$