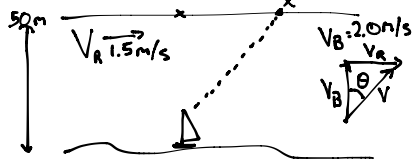
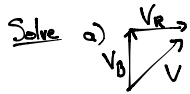


Given

Relative Velocity

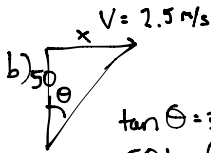


Find a) V , θ b) x



$$V^2 = V_B^2 - V_R^2$$

$$\sqrt{V^2} = \sqrt{(2)^2 - (1.5)^2}$$



$$\tan \theta = \frac{x}{50}$$

$$50 \tan(36.9^\circ) = x$$

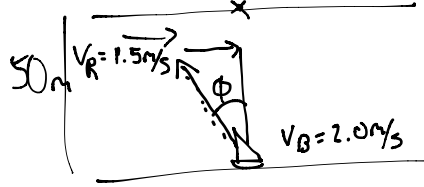
$$x = 37.5 \text{ m}$$

$$\theta = \tan^{-1}\left(\frac{V_R}{V_B}\right)$$

$$= \tan^{-1}\left(\frac{1.5}{2}\right)$$

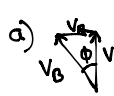
$$= 36.9^\circ$$

Given



Find a) V , ϕ b) t

Solve



$$V_B^2 = V^2 + V_R^2$$

$$V = \sqrt{V_B^2 - V_R^2}$$

$$V = \sqrt{2^2 - 1.5^2}$$

$$V = 1.32 \text{ m/s}$$

$$\sin \phi = \frac{1.5}{2.0}$$

$$\phi = \sin^{-1}\left(\frac{1.5}{2.0}\right)$$

$$\phi = 48.6^\circ$$

b)

$$V = \frac{d}{t}$$

$$t = \frac{d}{V}$$

$$t = \frac{50}{1.32}$$

$$t = 38 \text{ s}$$