

Example 1

Sunday, August 23, 2015 12:46 PM

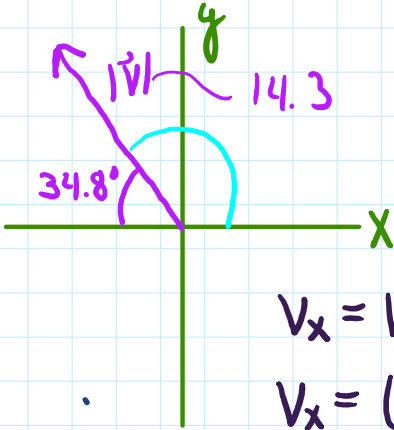
V is a vector 14.3 units in magnitude and points at an angle of 34.8 degrees above the negative x axis.

(a) sketch this vector

(b) find V_x and V_y

(c) use V_x and V_y to obtain (again) the magnitude and directions of Vector V.

NOTE: part (c) is a good way to check if you've resolved your vector correctly.



$$V_x = |\vec{V}| \cos \theta$$

$$V_x = (14.3) \cos (34.8^\circ)$$

$$V_x = -11.7$$

$$V_y = |\vec{V}| \sin \theta$$

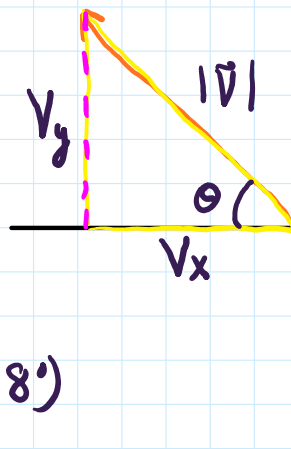
$$V_y = (14.3) \sin (34.8^\circ)$$

$$V_y = 8.16$$

$$c) |\vec{V}| = \sqrt{V_x^2 + V_y^2}$$

$$|\vec{V}| = \sqrt{(-11.7)^2 + (8.16)^2}$$

$$|\vec{V}| = 14.29$$



$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan \theta = \frac{V_y}{V_x}$$

$$\theta = \tan^{-1} \left(\frac{V_y}{V_x} \right)$$

$$\theta = \tan^{-1} \left(\frac{8.16}{-11.7} \right)$$

$$\theta = -34.8^\circ \text{ above } (-)x\text{-axis}$$