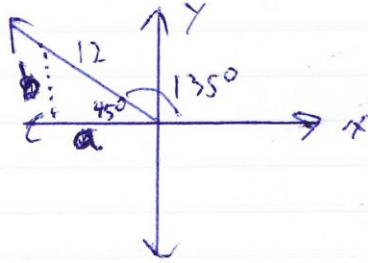


Section 5.1

PJ/66

6.

a) $|\vec{u}| = 12$ $\theta = 135^\circ$



$$a = 12 \cos 135^\circ$$

$$a = -12 \sin 45^\circ$$

$$a = -12 \left(\frac{\sqrt{2}}{2} \right)$$

$$a = -6\sqrt{2}$$

$$\vec{u} = (-6\sqrt{2}, 6\sqrt{2})$$

$$b = 12 \sin 135^\circ$$

$$b = 12 \sin 45^\circ$$

$$b = 12 \left(\frac{\sqrt{2}}{2} \right)$$

$$b = 6\sqrt{2}$$

18.

$$\vec{v} = (3, 4, 12)$$

$$\hat{v} = \frac{\vec{v}}{|\vec{v}|}$$

$$\hat{v} = \frac{(3, 4, 12)}{\sqrt{3^2 + 4^2 + 12^2}}$$

$$\hat{v} = \frac{(3, 4, 12)}{13}$$

$$\hat{v} = \left(\frac{3}{13}, \frac{4}{13}, \frac{12}{13} \right)$$

Opposite direction would be unit vector

$$\left(-\frac{3}{13}, -\frac{4}{13}, -\frac{12}{13} \right)$$