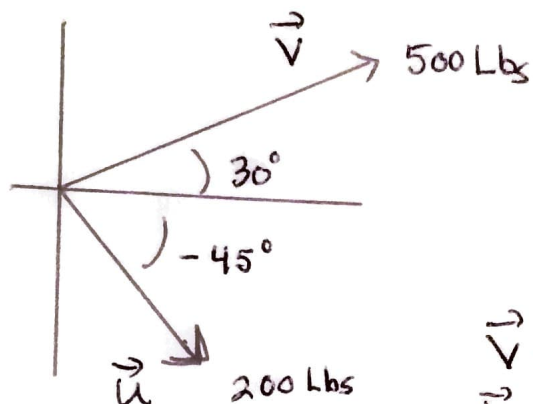


11.1 # 50 $\|\vec{v}\| = 5$ $\theta = 120^\circ$ in basis \hat{i} component

$$x = 5 \cos(120^\circ) = -2.50 \quad y = 5 \sin(120^\circ) \approx 4.33$$

$$\vec{v} = \langle -2.50, 4.33 \rangle = -2.50 \hat{i} + 4.33 \hat{j}$$

75.)



Find resultant

$$\vec{V} = 500 \cos 30^\circ \hat{i} + 500 \sin 30^\circ \hat{j}$$

$$\vec{U} = 200 \cos(45^\circ) \hat{i} + 200 \sin(-45^\circ) \hat{j}$$

$$\vec{V} = \langle 433.01, 250 \rangle$$

$$\vec{U} = \langle 141.42, -141.42 \rangle$$

$$\vec{U} + \vec{V} = \langle 574.43, 108.58 \rangle \quad \text{Resultant}$$

$$\|\vec{U} + \vec{V}\| = 584.60$$

$$\theta = \tan^{-1}\left(\frac{108.58}{574.43}\right) = 10.7^\circ$$

11.3 #15 Find angle between $\vec{u} = \langle 1, 1, 1 \rangle$ and $\vec{v} = \langle 2, 1, -1 \rangle$

$$\|\vec{u}\| = \sqrt{1+1+1} = \sqrt{3} \quad \|\vec{v}\| = \sqrt{4+1+1} = \sqrt{6}$$

$$\vec{u} \cdot \vec{v} = 1(2) + 1(1) + (1)(-1) = 2 + 1 - 1 = 2$$

$$\cos \theta = \frac{2}{(\sqrt{3})(\sqrt{6})} = \frac{2}{\sqrt{18}} = \frac{2}{3\sqrt{2}}$$

$$\theta = \cos^{-1}\left(\frac{2}{3\sqrt{2}}\right) \approx 61.9^\circ$$