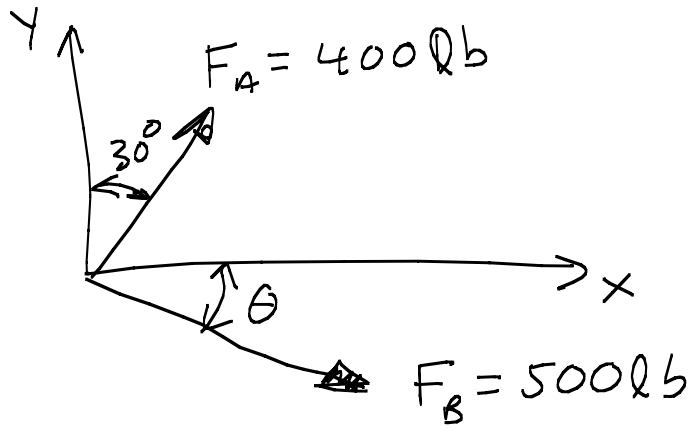
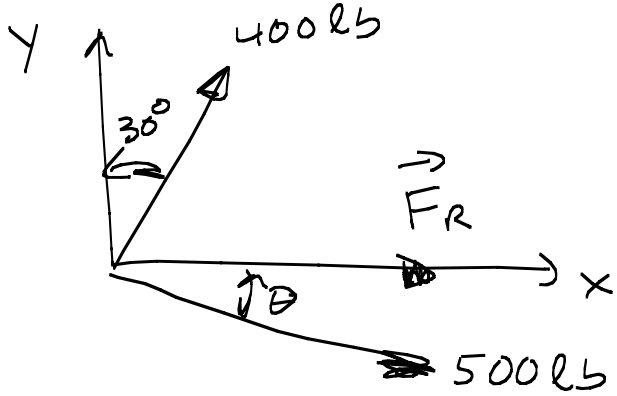
Problem 1

Given



Determine => θ such that the resultant angle of forces $\vec{F}_A$ and $\vec{F}_B$ is directed along the positive x-axis

=> Magnitude of the resultant force



$$\overset{+}{\rightarrow} \Sigma F_x \Rightarrow F_{Rx} = 400\,lb \sin 30^\circ + 500\,lb \cos\theta$$

$+\uparrow \Sigma F_y \Rightarrow \quad F_{Ry} = (400\text{lb})(\cos 30^\circ) - (500\text{lb})(\sin\theta) = 0$

$$\theta = 43.85^\circ$$

$F_{Rx} = F_R = (400\text{lb})(\sin 30^\circ) + (500\text{lb})(\cos 43.85^\circ)$

$$F_R = 560.6\text{lb}$$