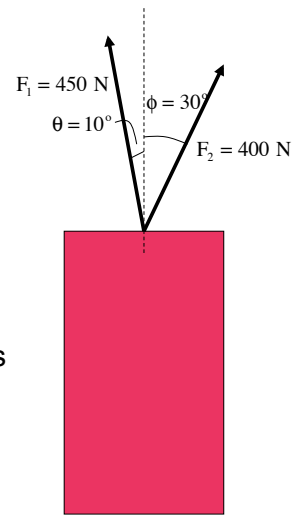


### Problem 4.12

Two forces act on a car as shown.

a.) What is the resultant force?

b.) If the car's mass is 3000 kg, what's its acceleration?



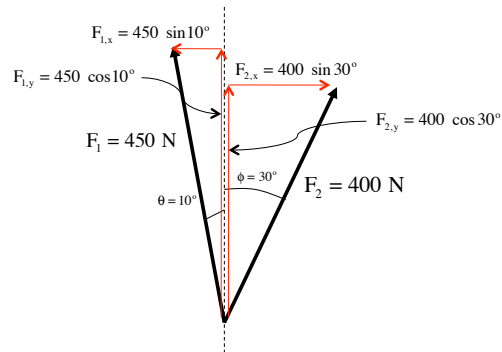
1.)

b.) If the car's mass is 3000 kg, what's its acceleration?

$$\begin{aligned} a &= \vec{F} / m \\ &= \left( \frac{F_x}{m} \hat{i} \right) + \left( \frac{F_y}{m} \hat{j} \right) \\ &= \frac{(122 \hat{i})}{(3000 \text{ kg})} + \frac{(790 \hat{j})}{(3000 \text{ kg})} \\ &= (4.1 \times 10^{-2} \text{ m/s}^2) \hat{i} + (2.6 \times 10^{-1} \text{ m/s}^2) \hat{j} \end{aligned}$$

3.)

a.) What is the resultant force?



$$\begin{aligned} \vec{F} &= [(400 \sin 30^\circ - 450 \sin 10^\circ) \hat{i} + (400 \cos 30^\circ + 450 \cos 10^\circ) \hat{j}] \text{ nt} \\ &= (122 \text{ nt}) \hat{i} + (790 \text{ nt}) \hat{j} \end{aligned}$$

2.)