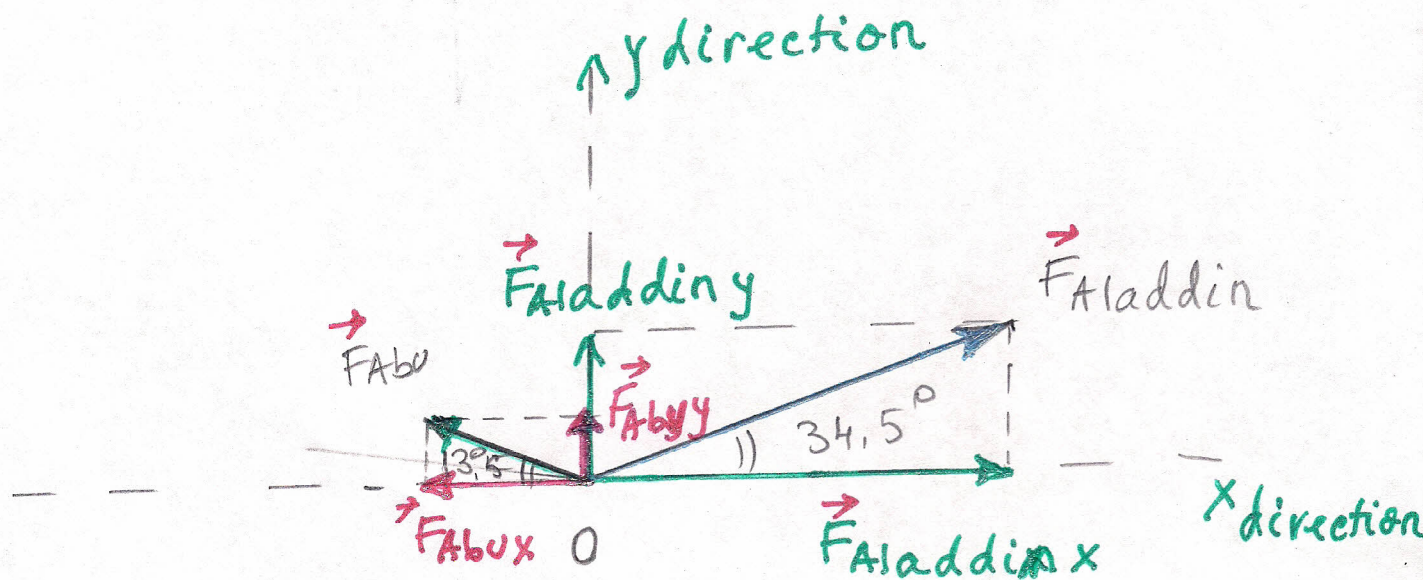


Aladdin and Abu Resultant Force Practice Problem



$$F_{Aladdin x} = F_{Aladdin} \cdot \cos 34.5^\circ$$

$$F_{Aladdin x} = 525 \text{ N} \cdot \cos 34.5^\circ$$

$$F_{Aladdin x} = 433 \text{ N}$$

$$F_{Aladdy} = 525 \text{ N} \cdot \sin 34.5^\circ$$

$$F_{Aladdy} = \del{215} \text{ N} \quad 297 \text{ N}$$

$$F_{Abux} = F_{Abu} \cdot \cos 13.5^\circ = 110 \text{ N}$$

$$F_{Abyy} = F_{Abu} \cdot \sin 13.5^\circ = 26 \text{ N}$$

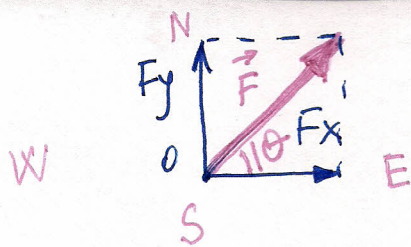
x direction $F_x = F_{Aladdin x} - F_{Abux}$

$$F_x = 433 \text{ N} - 110 \text{ N}$$

$$F_x = 323 \text{ N}$$

y direction $F_y = F_{Aladdy} + F_{Abyy}$

$$F_y = 323 \text{ N}$$



$$F^2 = F_x^2 + F_y^2$$

$$F = \sqrt{F_x^2 + F_y^2}$$

$$F = \sqrt{(323\text{N})^2 + (323\text{N})^2} = 323\sqrt{2}\text{N} = 457\text{N}$$

$$\tan \theta = \frac{F_y}{F_x}$$

$$\tan \theta = \frac{323\text{N}}{323\text{N}} = 1$$

$$\theta = \tan^{-1} 1 = 45^\circ$$

The Resultant force has a magnitude of 457N and the direction of 45° N of E (NE)