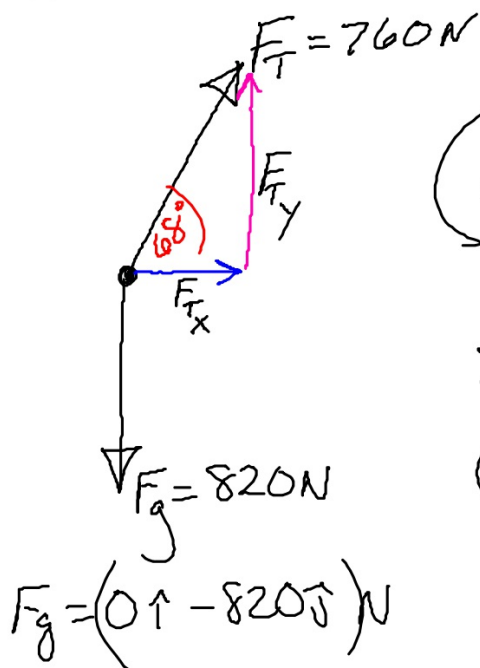


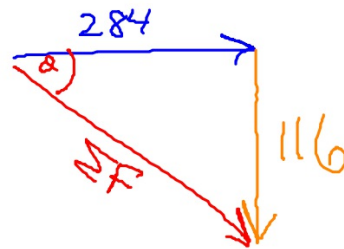
23. a) $F_T = ?$ b) $\Sigma F = ?$ c) $a = ?$



$$F_T = (284\hat{i} + 704\hat{j}) \text{ N}$$

$$\Sigma F = F_T + F_g$$

$$\Sigma F = (284\hat{i} - 116\hat{j}) \text{ N}$$

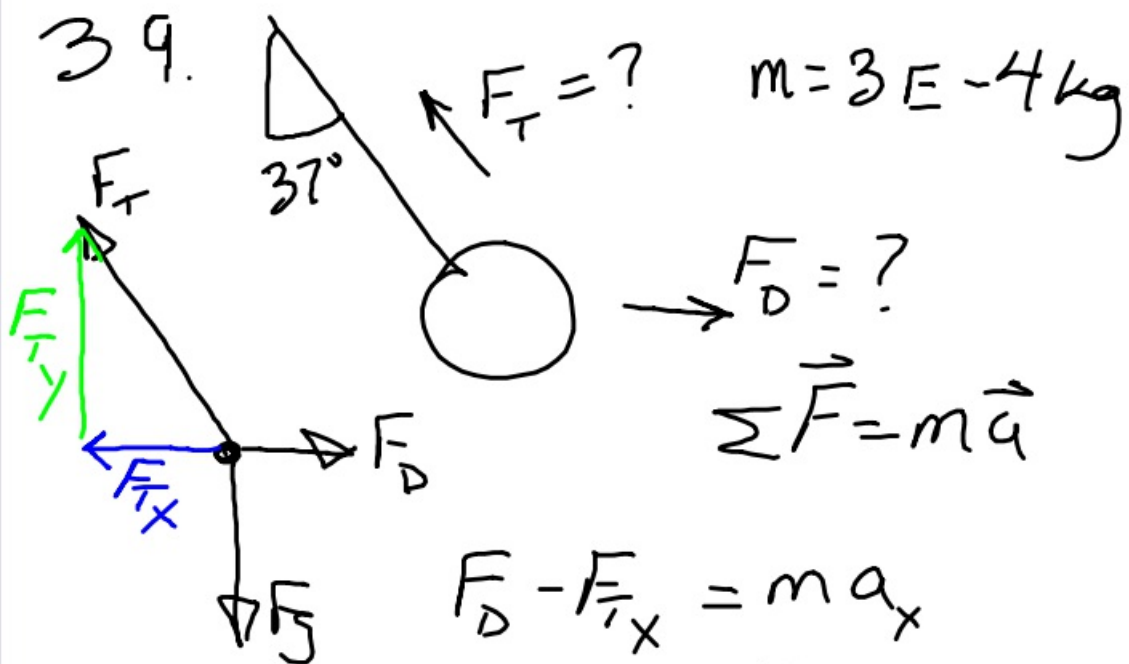


$$\Sigma F = 307 \text{ N}, -22^\circ$$

$$e) \quad a = \frac{\Sigma F}{m} = \frac{307 \text{ N}, -22^\circ}{83.7 \text{ kg}}$$

$$a = 3.67 \text{ m/s}^2, -22^\circ$$

39.



$$F_T = ? \quad m = 3 \times 10^{-4} \text{ kg}$$

$$F_D = ?$$

$$\Sigma \vec{F} = m \vec{a}$$

$$F_D - F_{Tx} = m a_x$$

$$F_D = F_{Tx}$$

$$F_D = (3.7 \times 10^{-3}) \cos 53^\circ$$

$$F_D = 2.2 \times 10^{-3} \text{ N}$$

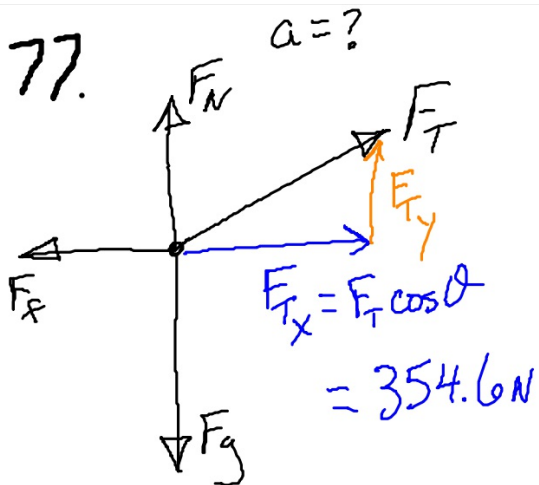
$$F_{Ty} - F_g = m a_y$$

$$F_{Ty} = F_g = mg$$

$$F_T \sin 53^\circ = (3 \times 10^{-4})(9.8)$$

$$F_T = 3.7 \times 10^{-3} \text{ N}$$

77.



$$a_x = \frac{F_{Tx} - F_f}{m}$$

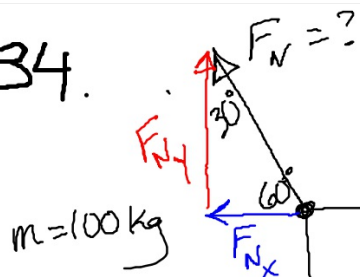
$$a_x = \frac{354.6 - 125}{310}$$

$$a_x = 0.74 \text{ m/s}^2$$

b)

$$a_x = \frac{354.6 - 125}{31.6 \text{ kg}} = 7.3 \text{ m/s}^2$$

34.



$$a = 0$$

$$\Sigma F = ma$$

don't rotate, as there is no acceleration!

$$\Sigma F_x = ma_x$$

$$F - F_{Nx} = ma_x$$

$$F - F_N \cos 60^\circ = 0$$

$$F = F_N \cos 60^\circ$$

$$F = 1132 \cos 60^\circ$$

$$F = 566 \text{ N}$$

$$\Sigma F_y = ma_y$$

$$F_{Ny} - F_g = ma_y$$

$$F_N \sin 60^\circ - mg = 0$$

$$F_N \sin 60^\circ = mg$$

$$F_N = \frac{(100)(9.8)}{\sin 60^\circ}$$

$$F_N = 1132 \text{ N}$$