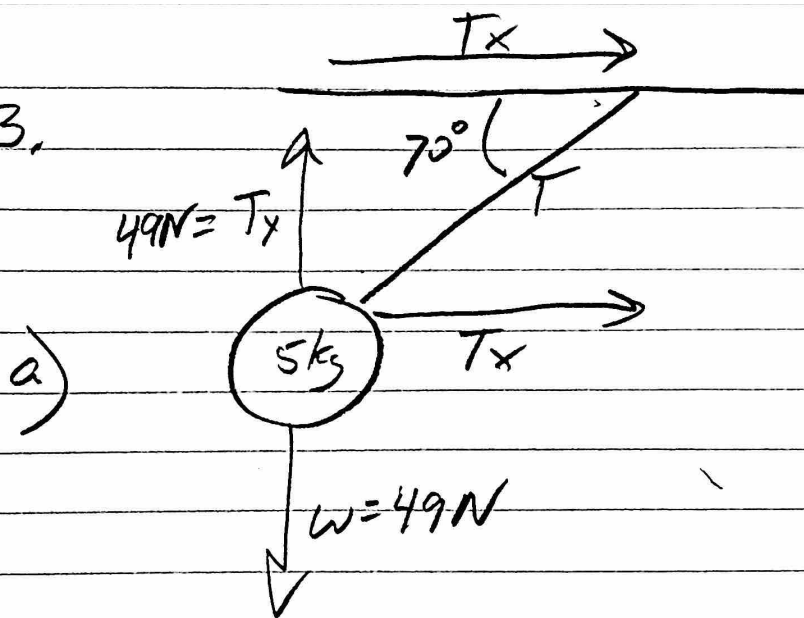


3.



$$\frac{T_y}{T_x} = \tan 70^\circ$$

$$T_x = \frac{T_y}{\tan 70^\circ} = \frac{49 \text{ N}}{\tan 70^\circ}$$

$$T_x = 17.8 \text{ N}$$

b)

$$W = Fd = 17.8 \text{ N} (30 \text{ m}) = 535 \text{ J}$$

c)

$$W_{\text{NET}} = \Delta KE = KE_f - KE_i = \frac{1}{2}mv_f^2 - \frac{1}{2}mv_i^2$$

$$535 \text{ J} = \frac{1}{2}(5 \text{ kg})v^2 - \frac{1}{2}(5 \text{ kg})(10 \text{ m/s})^2$$

$$v^2 = 314 \text{ m}^2/\text{s}^2$$

$$v = 17.7 \text{ m/s}$$

4.

$$P = \frac{W}{\Delta t} = \frac{5(100 \text{ J})}{1 \text{ s}} = \frac{500 \text{ J}}{1 \text{ s}} = 500 \text{ W}$$

$$500 \text{ W} \left(\frac{1 \text{ hp}}{746 \text{ W}} \right) = 0.67 \text{ hp}$$