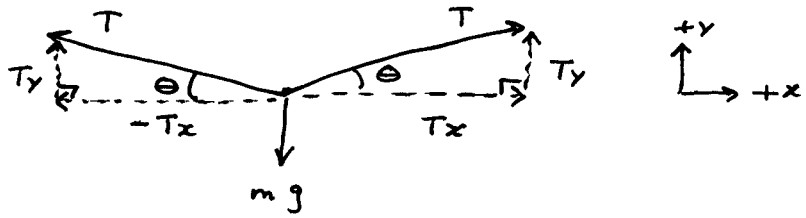
Exercise 8-8

Forces acting on crow:



$$\Sigma F_y = m a_y = 0$$

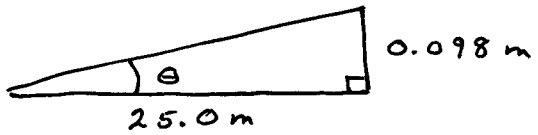
$$\therefore T_y + T_y - mg = 0$$

$$\therefore T_y = \frac{mg}{2}$$

Now, $T_y = T \sin\theta$

$$\therefore T = \frac{mg}{2 \sin\theta} \quad [1]$$

Determine θ:



$$\theta = \tan^{-1}\left(\frac{0.098}{25.0}\right) = 0.225^\circ$$

Subst. in [1]:

$$\therefore T = \frac{(1.10\ kg)(9.80\ m/s^2)}{2 \sin(0.225^\circ)}$$

$$= 1.4 \times 10^3\ N$$