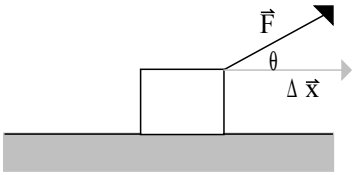
Chapter 6 Problem 47 [†]



Given
$\Delta x = 23\ m$
$F = 120\ N$
$W = 2500\ J$

Solution
Find the angle between the direction of the rope and horizontal.

From the definition of work

$$W = F\Delta x \cos\theta$$

$$\theta = \cos^{-1}\left(\frac{W}{F\Delta x}\right) = \cos^{-1}\left(\frac{2500\ J}{(120\ N)(23\ m)}\right)$$

$$\theta = 25.1^\circ$$

[†]Problem from Essential University Physics, Wolfson