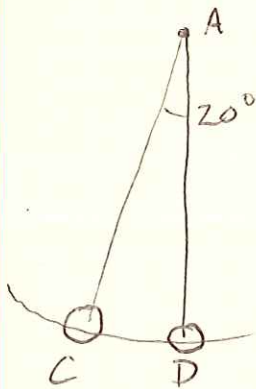


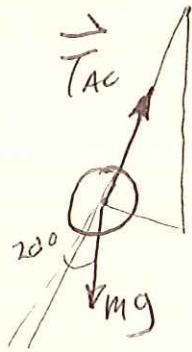
PROB. 12-45

$m = 60 \text{ kg}$, $L_{AB} = \rho = 15 \text{ m}$, FIND T_{AB} AT:

POINT C WHERE $v = 0$; POINT D WHERE $v = 4.2 \frac{\text{m}}{\text{s}}$



POINT C:



$$\Sigma F_n = m a_n = m \frac{v^2}{\rho}$$

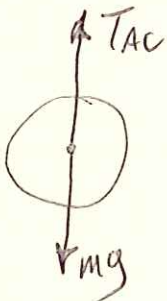
$$T_{AC} - mg \cos 20^\circ = m \frac{v^2}{\rho} = 0$$

$$T_{AC} = mg \cos 20^\circ$$

$$T_{AC} = (60 \text{ kg}) \left(9.81 \frac{\text{m}}{\text{s}^2} \right) \cos 20^\circ$$

$$T_{AC} = 553.1 \text{ N}$$

POINT D:



$$\Sigma F_n = m \frac{v^2}{\rho}$$

$$T_{AD} - mg = m \frac{v^2}{\rho}$$

$$T_{AD} = mg + m \frac{v^2}{\rho} = m \left(g + \frac{v^2}{\rho} \right)$$

$$T_{AD} = (60 \text{ kg}) \left[\left(9.81 \frac{\text{m}}{\text{s}^2} \right) + \frac{\left(4.2 \frac{\text{m}}{\text{s}} \right)^2}{(15 \text{ m})} \right] = 659.1 \text{ N}$$