P #C

Ch 7 - Worksheet

a) $v_{top} = 6.0\ m/s$
$m = .50\ kg$
$r = .75\ m$

$F_c = F_{net}$

$F_c = W + T$

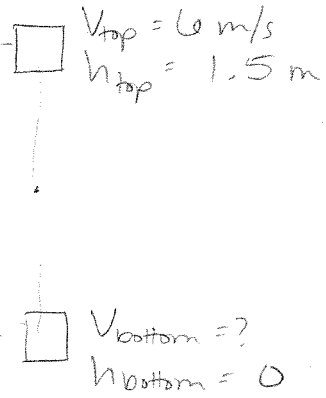
$\frac{m \cdot v_t^2}{r} = m \cdot g + T$

$\frac{(.50\ kg)(6\ m/s)^2}{(.75\ m)} = (.50 kg)(9.8\ m/s^2) + T$

$T_{top} = 19\ N$

b) $v_{top} = 6.0\ m/s$
$h_{top} = (.75\ m) \cdot 2 = 1.50\ m$

$v_{bottom} = ?$
$h_{bottom} = 0\ m$



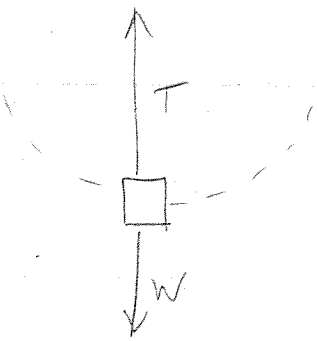
$KE_{top} + PE_{top} = KE_{bottom} + PE_{bottom}$

$\frac{1}{2} \cdot m \cdot v_{top}^2 + m \cdot g \cdot h_{top} = \frac{1}{2} \cdot m \cdot v_{bottom}^2 + \cancel{m \cdot g \cdot h}$

$\frac{1}{2}(\cancel{.5\ kg})(6 m/s)^2 + (\cancel{.5 kg})(9.8 m/s^2)(1.5\ m) = \frac{1}{2} \cdot (\cancel{.5\ kg}) \cdot v_{bottom}^2$

$v_{bottom} = 8.1\ m/s$

c) $v_{bottom} = 8.1\ m/s$
$m = .50\ kg$
$r = .75\ m$



$F_c = F_{net}$

$F_c = T - W$

$\frac{m \cdot v^2}{r} = T - m \cdot g$

$(.5\ kg)(8.1 m/s)^2 = T - (.5\ kg)(9.8 m/s^2)$

$T_{bottom} = 48.5\ N$