

P. 287 #7

frictionless 100% eff. ME

$v_i = 3.2 \text{ m/s}$

$v_f = 9.7 \text{ m/s}$

25°

$ME_{\text{top}} = ME_{\text{bot}}$

$\frac{1}{2} m v_i^2 + mgh = \frac{1}{2} m v_f^2 + mgh$

$\frac{1}{2} (3.2)^2 + (9.8)(h) = \frac{1}{2} (9.7)^2 + 0$

$5.12 + 9.8(h) = 47.05$

$h = \frac{47.05 - 5.12}{9.8} \frac{\text{m}}{\text{s}^2}$

$h = 4.27 \text{ m}$

$\sin 25 = \frac{h}{l}$

$l = \frac{h}{\sin 25} = \frac{4.27}{\sin 25} = 10.1 \text{ m}$

$\frac{\frac{\text{m}}{\text{s}^2}}{\frac{\text{m}}{\text{s}^2}} = \frac{\text{m}}{\text{s}^2} \cdot \frac{\text{s}^2}{\text{m}} = (\text{M})$

May 16-10:38 AM