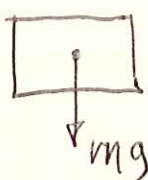


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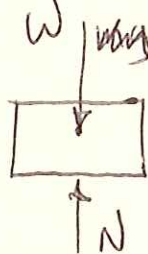
$m_c = 2400 \text{ LB}$, $v = 100 \frac{\text{mi}}{\text{hr}} = 146.7 \frac{\text{ft}}{\text{s}}$
 W_c

CAR LOSES CONTACT AT POINT A. a) FIND ρ

b) FIND FORCE ON 160 LB DRIVER BY SEAT OF 3100 LB CAR AT $v = 50 \frac{\text{mi}}{\text{hr}} = 73.33 \frac{\text{ft}}{\text{s}}$

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

$$\rho = \frac{v^2}{g} = \frac{(146.7 \frac{\text{ft}}{\text{s}})^2}{(32.2 \frac{\text{ft}}{\text{s}^2})} = 668.3 \text{ ft}$$

b)  $\Sigma F_n = m \frac{v^2}{\rho}$
 $W - N = m \frac{v^2}{\rho}$ $W = mg, m = \frac{W}{g}$

$$N = W - \left(\frac{W}{g}\right) \cdot \frac{v^2}{\rho} = W \left(1 - \frac{v^2}{\rho g}\right)$$

~~$N = (160 \text{ LB})$~~

$$N = (160 \text{ LB}) \left[1 - \frac{(73.33 \frac{\text{ft}}{\text{s}})^2}{(32.2 \frac{\text{ft}}{\text{s}^2})(668.3 \text{ ft})} \right] = 120.0 \text{ LB}$$