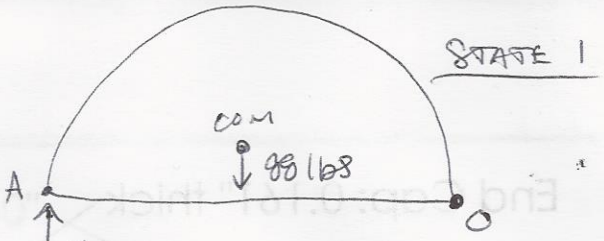
LINEAR IMPULSE OF LID

STATE 1

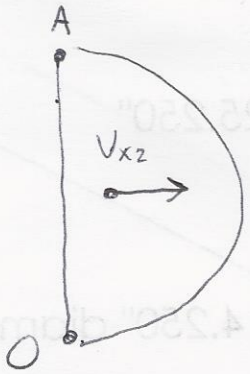


$$m(V_x)_1 + \sum \int_{T_1}^{T_2} F_x \, dT = m(V_x)_2$$

$$0 + \int_0^3 10^{lbs} \, dT = \frac{88}{32.2} (V_x)_2$$

$$30 \text{ lbs} \cdot \text{sec} = 2.73 \frac{lb \cdot s^2}{FT} (V_x)_2$$

$$\Rightarrow V_{x_2} = 10.98 \frac{FT}{S}$$



CONSERVATION OF MOMENTUM

B = BOTTOM
A = TOP

$$m_B V_{B_1} + m_A V_{A_1} = m_B V_{B_2} + m_A V_{B_1}$$

$V_{B_1} = 0$, $V_{A_1} = 10.98$

$$\frac{88}{32.2}(10.98) = \frac{360}{32.2}(V_{B_2})$$

$$\Rightarrow V_{B_2} = 2.684 \frac{FT}{S}$$

LINEAR IMPULSE BOTTOM

$$m(V_{x_1}) + \int_{T_1}^{T_2} F_x \, dT = m(V_{x_2})$$

$V_{x_1} = 0$

$$F(T)\Big|_{T_1}^{T_2} = \frac{360}{32.2}(2.684)$$

$$F(T_2 - T_1) = 30$$

STUCK ON THE TIME INTERVAL - I JUST WANT TO KNOW IF BOTTOM TIPS ~~I'M ASSUMING IT~~