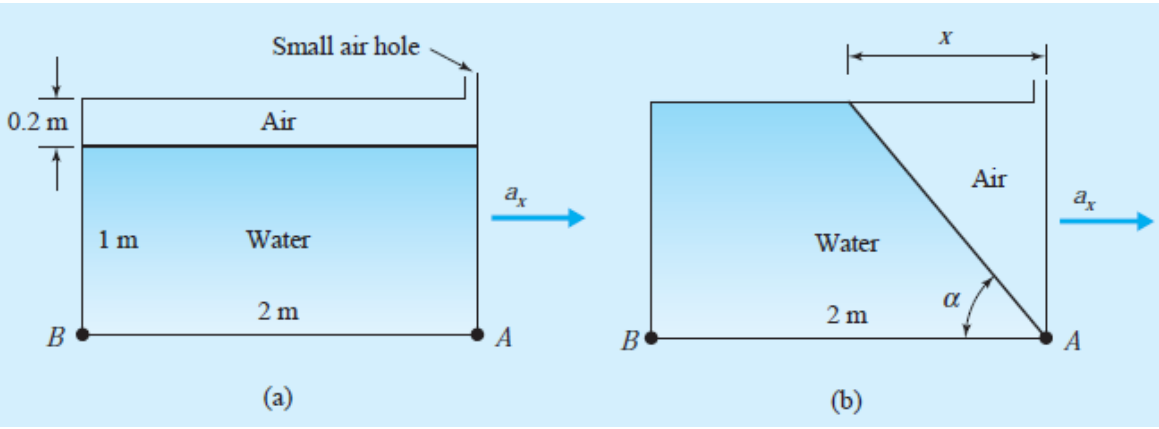


The tank shown in Figure below is accelerated to the right. Calculate the acceleration a_x needed to cause the free surface to touch point A . Also, find p_B and the total force acting on the bottom of the tank if the tank width is 1.0 m ($\rho_W = 1000 \text{ kg/m}^3$).

$$V_a = V_b \Rightarrow 0.2 \times 2 = \frac{1}{2} \times 1.2 \times x$$

$$x = 0.067 \text{ m}$$

$$\tan \alpha = \frac{1.2}{0.667} = 1.8$$



$$a_x = g \tan \alpha = 9.81 \times 1.8 = 17.66 \text{ m/s}^2$$

$$p_B = -\rho a_x (x_B - x_A) = -1,000 \times 17.66 \times (-2) = 35,300 \text{ Pa}$$

$$F = \frac{p_B + p_A}{2} \times \text{area} = \frac{35,300 + 0}{2} \times 2 \times 1.0 = 35,300 \text{ N}$$