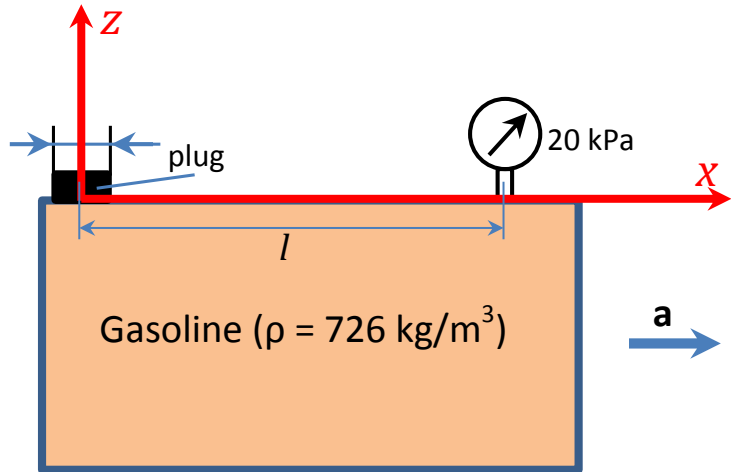


The tank, with an initial pressure of  $p_{initial} = 20 \text{ kPa}$  is accelerated at the rate of  $5 \text{ m/s}^2$ . Calculate force on the 4-cm-diameter plug ( $l = 1.2 \text{ m}$ ).



$$p|_{x=0} = p_{initial} + \rho a l = 20,000 + 726 \times 5.0 \times 1.2 = 24,356 \text{ Pa}$$

$$F = pA = p \frac{\pi d^2}{4} = 24,356 \times \frac{3.14 \times 0.04^2}{4} = 30.59 \text{ N}$$