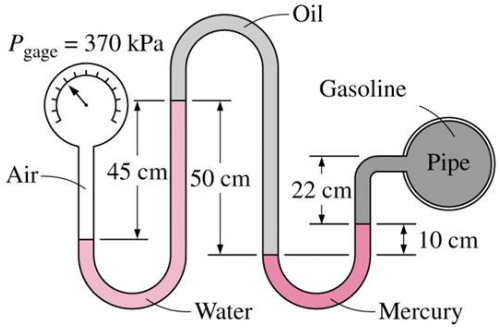
A gasoline containing pipe is connected to a pressure gage through a double-U manometer, as shown in the figure below. If the reading of the pressure gage is 370 kPa, determine the gage pressure of the gasoline in the pipe. Densities are as follows: ρ_{water} = 1000 kg/m^3, ρ_{oil} = 790 kg/m^3, $\rho_{mercury}$ = 13600 kg/m^3, $\rho_{gasoline}$ = 700 kg/m^3. The gravitational acceleration can be taken as g = 10 m/s^2. (**4 marks**)



$$P_{gage} - \rho_{water} g (0.45) + \rho_{oil} g (0.50) - \rho_{mercury} g (0.10) - \rho_{gasoline} g (0.22) = P_{gasoline}$$

$$370\,000 - 1000 \cdot 10 (0.45) + 790 \cdot 10 \cdot 0.50 - 13600 \cdot 10 (0.10) - 700 \cdot 10 \cdot 0.22 = P_{gasoline}$$

$$P_{gasoline} = 354{,}310 \text{ Pa}$$