

Série n°2 - Mécanique des Fluides

Exercise 1:

Determine the reading h in figure 1 for $P_A = 39$ kPa vacuum if liquid is kerosene ($s.g. = 0.83$).

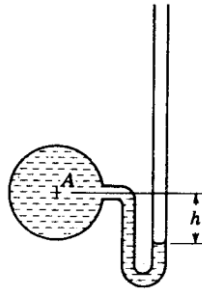


Figure 1

Exercise 2:

In figure 2 $s.g.1 = 0.84$, $s.g.2 = 1.0$, $h_2 = 96$ mm, $h_1 = 159$ mm. Find P_A in mmHg gage. If the barometer reading is 729 mmHg, what is P_A in mmH₂O absolute?

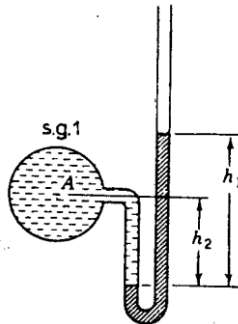


Figure 2

Exercise 3:

In figure 3, fluid 2 is carbon tetrachloride ($\gamma_2 = 15,57$ KN/m³) and fluid 1 is benzene ($\gamma_1 = 8,62$ KN/m³). If $P_{atm} = 101.5$ kPa, determine the absolute pressure at point A.

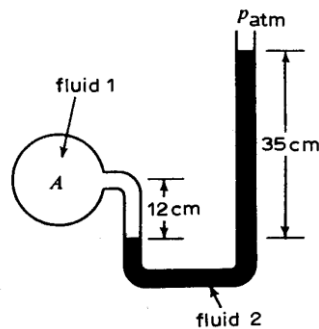


Figure 3

Exercise 4:

A dam 20m long retains 7m of water, as shown in figure 4. Find the total resultant force acting on the dam and the centre of pressure.

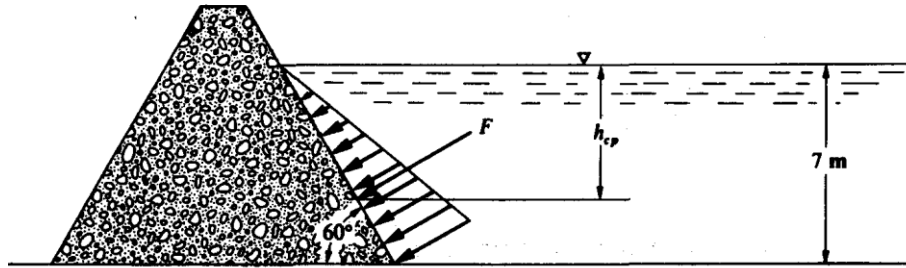


Figure 4

Exercise 5:

A vertical, triangular gate with water on one side is shown in figure 5. Determine the total resultant acting pressure on the gate and the location of the center of pressure.

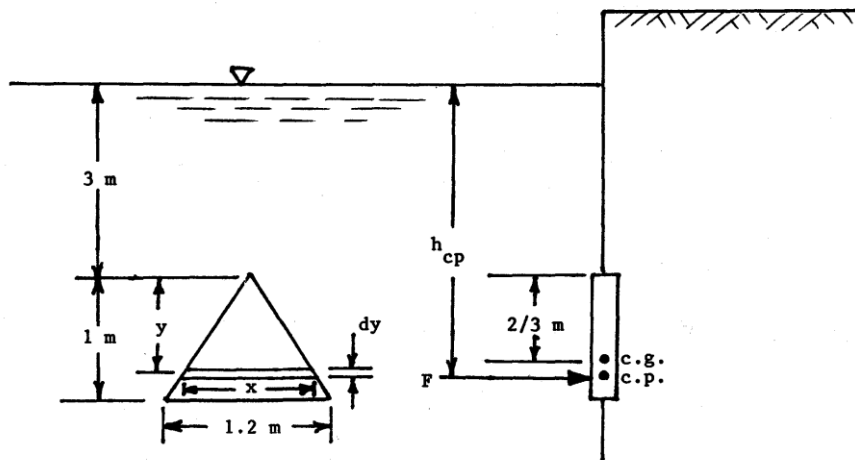


Figure 5

Exercise 6 :

The submerged brick in figure 6 is balanced by 2.54 kg of mass on the beam scale. What is the specific weight of the brick, if it displaces 2.197 litres of water?

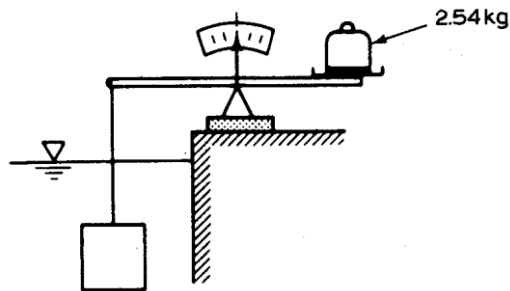


Figure 6