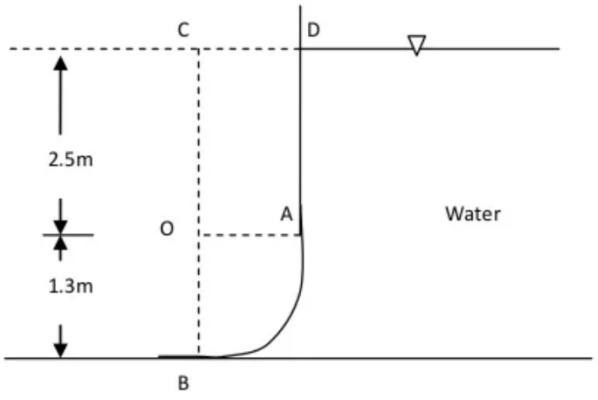
Tutorial (29th August 2022)

Q.1]

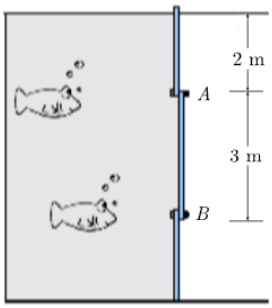
The water is on the right side of the curved surface AB, which is one quarter of a circle of radius 1.3m. The tank's length is 2.1m. Find the horizontal and vertical component of the hydrostatic force acting on the curved surface.



Q.2]

An aquarium tank has a $3\ \mathrm{m} \times 1.5\ \mathrm{m}$ window AB for viewing the inhabitants. The tank contains water with density $\rho = 1000\ \mathrm{kg/m^2}$.

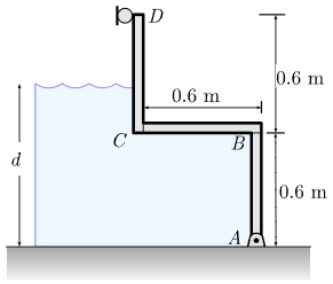
Find the force of the water on the window, and the location of the equivalent point load.



Q.3]

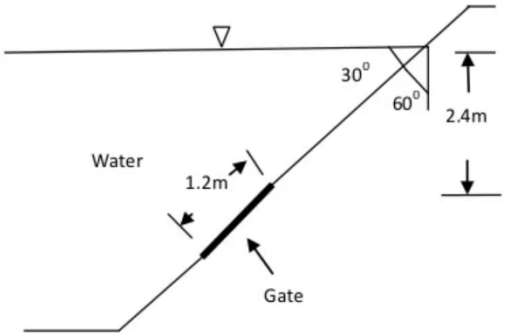
The gate at the end of a freshwater channel is fabricated from three ,125 kg, 0.6 m×1 m rectangular steel plates. The gate is hinged at A and rests against a frictionless support at D. The depth of the water d=0.75m.

Draw the free body diagram and determine the reactions at A and D.



Q.4]

An inclined rectangular gate (1.5 m wide) contains water on one side. Determine the total resultant force acting on the gate and the location of C.P.



Q.5]

Circular gate ABC in the fig is 4m in diameter and is hinged at B. Compute the force P just sufficient to keep the gate from opening when h is 8m.