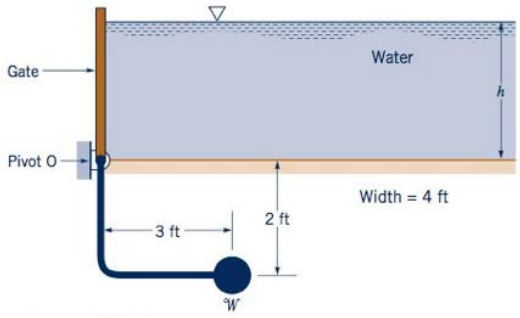
September 16, 2015

NAME

Fluids-ID

Quiz 2. The massless, 4-ft wide gate shown in the right figure pivots about the frictionless hinge O. The water depth h is 6 ft.



(a) Find the resultant pressure force F_R acting on the gate. Use γ = 62.4 lb/ft^3 for water.

(b) Find the location of center of pressure y_R. (Hint: $I_{xc} = bh^3/12$, where b is the gate width)

(c) Determine the counterweight W that holds the gate in place. (Hint: Consider the equilibrium of the moment about point O)

Note: Attendance (+2 points), Format (+1 point)