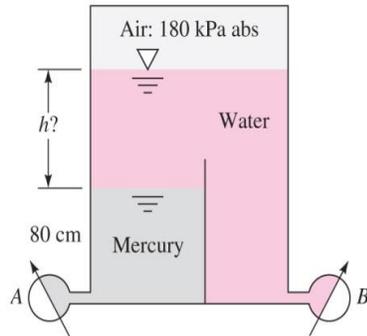


Mechanical & Mechatronic Engineering Department
ENMC4411 Thermal Fluid Engineering
Homework #1 Fluid statics

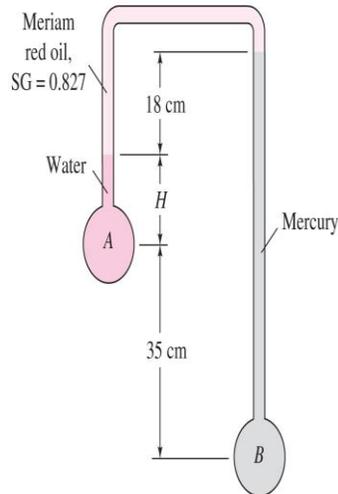
- 1) In the figure all fluids are at 20 °C. Gage A reads 350 kPa absolute. Determine (a) the height h in cm (a); and (b) the reading of gage B in kPa absolute.

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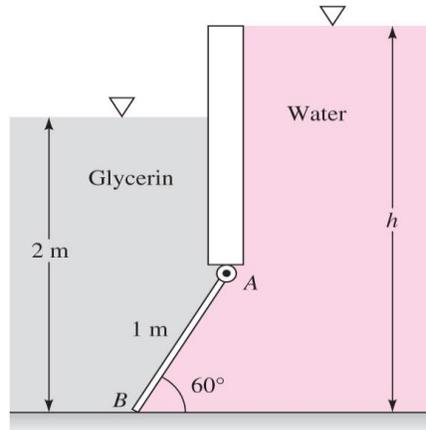
- 2) For the manometer of the figure, all fluids are at 20 °C. If $P_B - P_A = 97$ kPa, determine the height H in centimeters.

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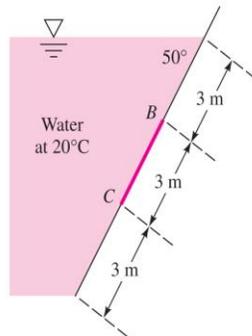
- 3) Gate AB in the figure is a homogeneous mass of 180 kg, 1.2 m wide into the paper, resting on smooth bottom B. All fluids are at 20 °C. For what water depth h will the force at point B be zero?

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- 4) Panel BC in Fig. below is circular. Compute (a) the hydrostatic force of the water on the panel; (b) its center of pressure; and (c) the moment of this force about point B.

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- 5) A uniform block of steel ($SG = 7.85$) will “float” at a mercury-water interface as in the figure. What is the ratio of the distances a and b for this condition?

