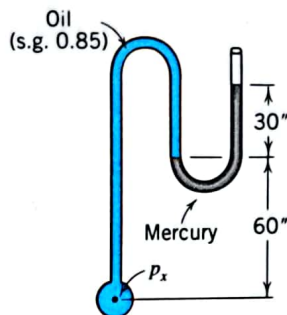


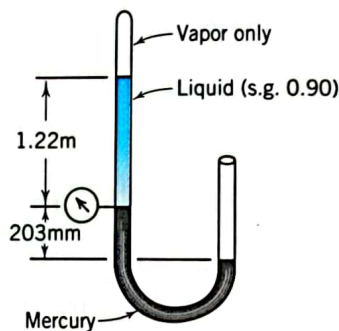
2.31. Calculate the pressure  $p_x$  in Fig. 2.7a if  $l = 760$  mm,  $h = 500$  mm; liquid  $\gamma$  is water, and  $\gamma_1$  mercury.

2.32. With the manometer reading as shown, calculate  $p_x$ .



Problem 2.32

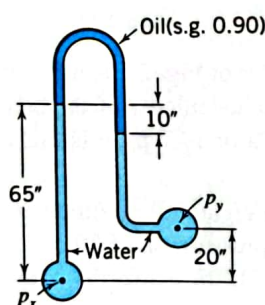
2.33. Barometric (absolute) pressure is 91 kPa. Calculate the vapor pressure of the liquid and the gage reading.



Problem 2.33

2.34. In Fig. 2.7b,  $l_1 = 1.27$  m,  $h = 0.51$  m,  $l_2 = 0.76$  m, liquid  $\gamma_1$  is water,  $\gamma_2$  benzene, and  $\gamma_3$  mercury. Calculate  $p_x - p_y$ .

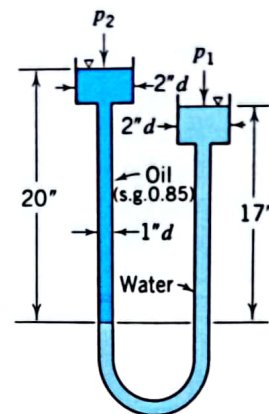
2.35. Calculate  $p_x - p_y$  for this inverted U-tube manometer.



Problem 2.35

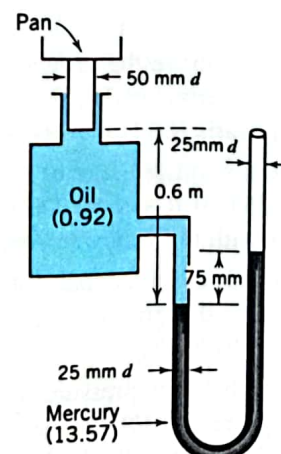
2.36. An inclined gage (Fig. 2.7c) having a tube of 3 mm bore, laid on a slope of 1: 20, and a reservoir of 25 mm diameter contains silicon oil (s.g. 0.84). What distance will the oil move along the tube when a pressure of 25 mm of water is connected to the gage?

2.37. The meniscus between the oil and water is in the position shown when  $p_1 = p_2$ . Calculate the pressure difference ( $p_1 - p_2$ ) which will cause the meniscus to rise 2 in.



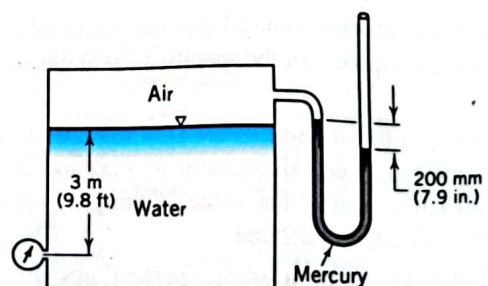
Problem 2.37

2.38. Predict the manometer reading after a 1 N weight is placed on the pan. Assume no leakage or friction between piston and cylinder.



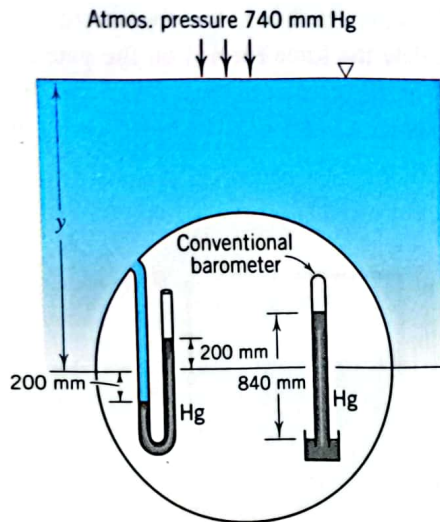
Problem 2.38

2.39. Calculate the gage reading.



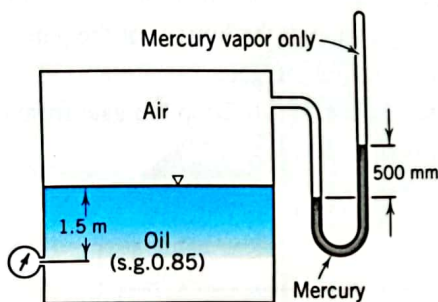
Problem 2.39

2.40. The sketch shows a sectional view through a submarine. Calculate the depth of submergence,  $y$ . Assume the specific weight of seawater is  $10.0$  kN/m<sup>3</sup>.



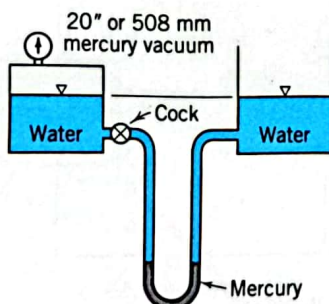
Problem 2.40

2.41. Calculate the gage reading. Specific gravity of the oil is 0.85. Barometric pressure is 755 mm of mercury.



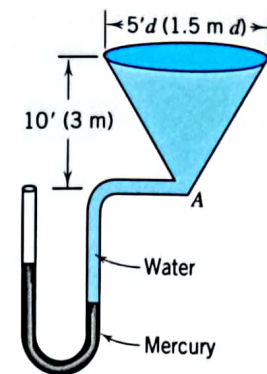
Problem 2.41

2.42. Calculate magnitude and direction of manometer reading when the cock is opened. The tanks are very large compared to the manometer tubes.



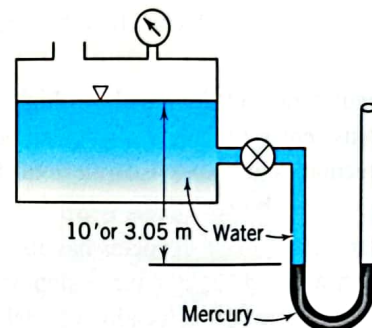
Problem 2.42

2.43. The manometer reading is 6 in. (150 mm) when the tank is empty (water surface at A). Calculate the manometer reading when the tank is filled with water.



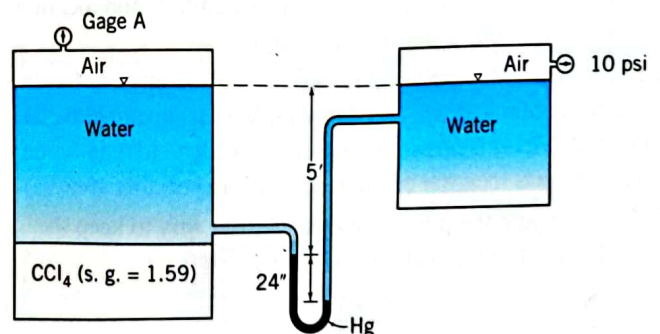
Problem 2.43

2.44. Barometric pressure is 28 in. or 711 mm of mercury. The cock is opened and the air space pumped out so that the gage reads 20 in. or 508 mm of mercury vacuum. Calculate the absolute pressure in the tank and the manometer reading. Neglect change of water surface in the tank.



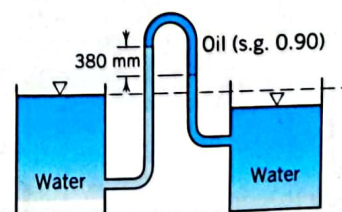
Problem 2.44

2.45. Find the pressure reading of Bourdon gage A.



Problem 2.45

2.46. This manometer is used to measure the difference in water level between the two tanks. Calculate this difference.



Problem 2.46