

- ① ~~plunger~~ a plunger is moving through a cylinder at a speed of 20 ft/s, as shown in the figure. The film of oil separating the plunger from the cylinder has a viscosity of 0.020 lb·s/ft². What is the force required to maintain its motion?

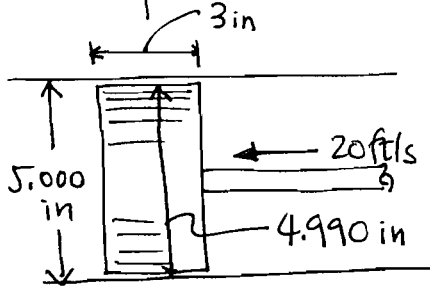


FIG. FOR ①

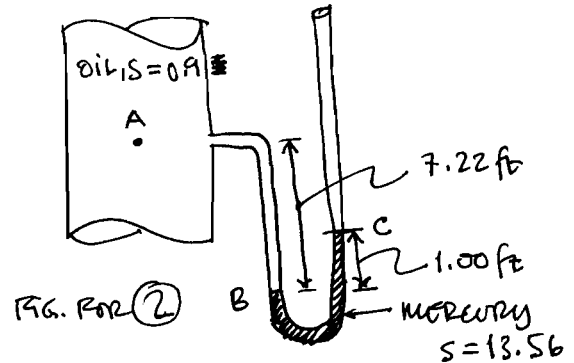
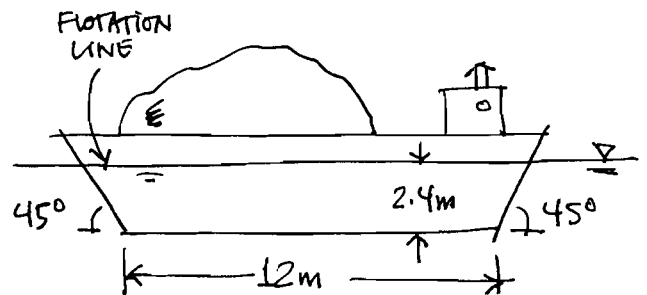
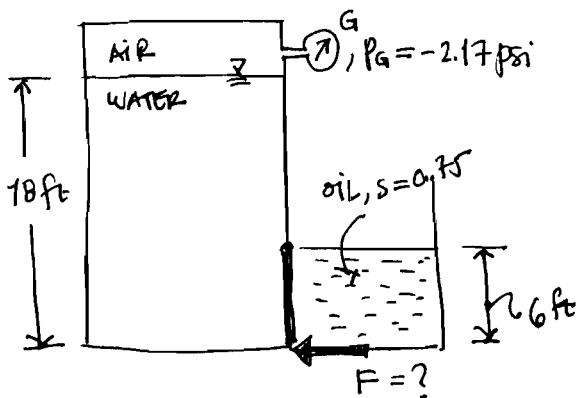


FIG. FOR ②

- ② For the vertical pipe with manometer attached, as shown in the figure, find the pressure (gage pressure) in the oil at point A.

- ③ Gate AB in the figure is 4 ft wide and hinged at A. Gage G reads -2.17 psi, while oil ($s=0.75$) is in the right tank. What horizontal force must be applied at B for equilibrium of gate AB?



- ④ What is the total weight of barge and load in the figure? The barge is 6 m in width.