

## 1 Manometers

Liquid in a manometer has  $\rho = 850 \text{ kg/m}^3$ . What is the difference in the liquid levels  $h$  in the manometer tubes, if the difference pressure between tubes is  $5.2 \text{ kPa}$ ?

### Comments

What is specific weight?

$\gamma$ -weight per unit volume of material;  
in case of water  $\gamma = 9.8 \text{ kN/m}^3$ .

## 2 Open tank

A pressure gauge located at the base of open tank containing a liquid with  $\rho = 46.8 \text{ lb/ft}^3$  registers  $11.7 \text{ psi}$ . What is the depth of the fluid in the tank (provide result in SI units)?

## 3 Diaphragm pressure sensor

A diaphragm has effective area of  $25 \text{ cm}^2$ . If pressure difference across the diaphragm is  $35 \text{ kPa}$ , what force is applied to the diaphragm?

### Comments

If pressure  $p_1$  exists on one side of the diaphragm and  $p_2$  on other, then force on it will be

$$F = (p_1 - p_2)A,$$

where  $A$  is a diaphragm area.