Problem 3.6

The valve for the absolute pressure will always be greater than that for the gage pressure.

True $p_{abs} = p_{gage} + p_{atm}$

Problem 3.7

As long as you stay on the surface of Earth, the atmospheric pressure will be 14.7 psia.

False. atmospheric pressure changes with elevation.

Problem 3.8

The pressure in a certian tank is -55.8 Pa(abs)

False. there cannot be negitive absolute pressure.

Problem 3.9

The pressure in a certian tank is -4.65 psig.

True

Problem 3.10

The pressure in a certian tank is -150 kPa (gage)

False. Absolute zero pressure is -101 kpa (gages)

Problem 3.11

Given: standard atmosphere

Find: atmospheric pressure at 4000 ft

Solution:

Table E-3 states

h	p
1000	14.173
4000	x
5000	12.227

$$\frac{4000-1000}{5000-1000} = \frac{x-14.173}{12.227-14.173}$$

$$x = \underline{\underline{12.71 \text{ psi (abs)}}}$$

Problem 3.13

Given: glass of milk

Find: gage pressure at surface

Solution:

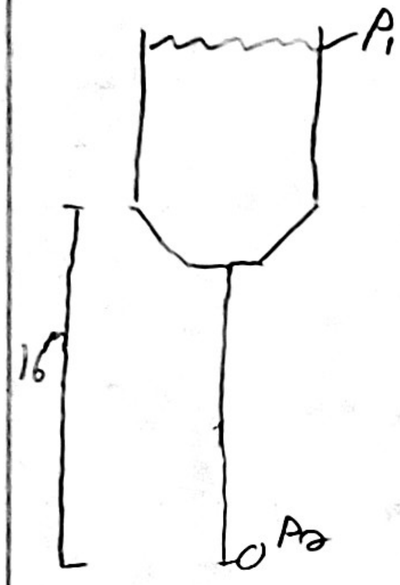
Surface of liquid is exposed to the atmosphere $\therefore$ $\underline{\underline{p = 0 \text{ Pa (gage)}}}$

Problem 3.94

Given: heater tank is open to atmospheric pressure and is mounted 16 m above ground

Find: what pressure cgages must the plumbing be able to with stand?

Solution



$p_1 = \gamma \cdot h$

$p_1 = 9.81 \frac{kN}{m^3} \cdot 0\,m$

$p_1 = 0\,kPa$

$p_2 = \gamma \cdot h$

$p_2 = 9.81 \frac{kN}{m^3} \cdot 16\,m$

$p_2 = 156.96\,kPa$

$\Delta p = P_2 - P_1$

$\Delta p = 156.96\,kPa - 0\,kPa$

$\Delta p = 156.96\,kPa$

Piping gage pressure is <u>156.96 kPa</u>