Question # 82166

What is the pressure (in millimeters of mercury) inside a container of a gas connected to an open-end manometer filled with hexane (density = 0.6500 g/cm3) when the level in the arm connected to the container is 648.4 mm in height lower than the level in the arm open to the atmosphere? Atmospheric pressure is 754.6 mm Hg and the density of mercury is 13.546 g/mL.

Answer:

The pressure inside a container of gas is 785.7 mm Hg.

The pressure (in millimeters of mercury) inside a container of gas is:

$$P_a = P_O + h_{hex} * \frac{\rho_{hex}}{\rho_{Hg}} = 754.6 + 648.4 * \frac{0.6500}{13.546} = 785.7 \, mm$$

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