76. If the mercury level in one arm of the tube is lowered by an amount x, it will rise by x in the other arm. Thus, the net difference in mercury level between the two arms is $2x$, causing a pressure difference of $\Delta p = 2\rho_{\text{Hg}} g x$, which should be compensated for by the water pressure $p_w = \rho_w g h$, where $h = 11.2\,\text{cm}$. In these units, $\rho_w = 1\,\text{g/cm}^3$ and $\rho_{\text{Hg}} = 13.6\,\text{g/cm}^3$ (see Table 15-1). We obtain

$$x = \frac{\rho_w g h}{2\rho_{\text{Hg}} g} = \frac{\left(1.00\,\text{g/cm}^3\right)(11.2\,\text{cm})}{2\,(13.6\,\text{g/cm}^3)} = 0.412\ \text{cm}\ .$$