2.40

2.40) Two pipes are connected by a manometer as shown in Fig. P2.40. Determine the pressure difference, $p_A - p_B$, between the pipes.

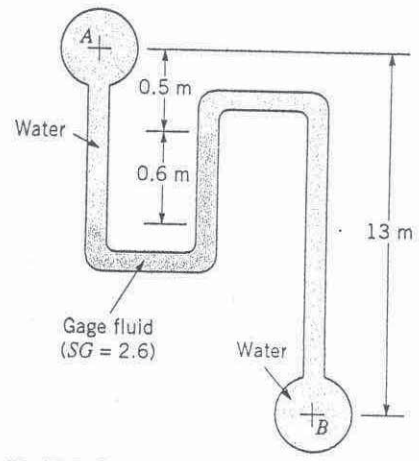

FIGURE P2.40

$$p_A + \gamma_{H_2O}(0.5m + 0.6m) - \gamma_{gf}(0.6m) + \gamma_{H_2O}(1.3m - 0.5m) = p_B$$

Thus,

$$p_A - p_B = \gamma_{gf}(0.6m) - \gamma_{H_2O}(0.5m + 0.6m + 1.3m - 0.5m)$$

$$= (2.6)\left(9.81 \frac{kN}{m^3}\right)(0.6m) - \left(9.80 \frac{kN}{m^3}\right)(1.9m)$$

$$= \underline{\underline{-3.32\ kPa}}$$