1.78 When a fluid flows through a sharp bend, low pressures may develop in localized regions of the bend. Estimate the minimum absolute pressure (in psi) that can develop without causing cavitation if the fluid is water at 160 °F.

Cavitation may occur when the local pressure equals the vapor pressure. For water at 160 °F (from Table 8.1 in Appendix B)

\[ p_v = 4.74 \text{ psi (abs)} \]

Thus, minimum pressure = 4.74 psi (abs)

1.79 Estimate the minimum absolute pressure (in pascals) that can be developed at the inlet of a pump to avoid cavitation if the fluid is carbon tetrachloride at 20 °C.

Cavitation may occur when the suction pressure at the pump inlet equals the vapor pressure. For carbon tetrachloride at 20°C \( p_v = 13 \text{ kPa (abs)} \).

Thus, minimum pressure = 13 kPa (abs)