Homework 5

1. A pitot probe is inserted in an air flow at STP \(^1\) to measure the flow speed. The tube is inserted so that it points upstream into the flow and the pressure sensed by the probe is the stagnation pressure. The static pressure is measured at the same location in the flow, using a wall pressure tap. If the pressure difference is 30 mm of mercury, determine the flow speed. \textit{Hint: The density of mercury is 13,600 kg/m}^3.

![Pitot probe in duct](image)

Figure 1: Pitot probe in duct

2. Section 3.5: Problem 1.

3. Section 3.7: Problems 2, 3, 4, and 5.

\(^1\)Standard Temperature and Pressure.