2-2 (Unit A-4)

The altimeter on a low-speed Piper cub reads 10,000 ft. At the same time, a Pitot-static probe mounted on the wing tip of the airplane measures a pressure (pressure difference) of 0.25 psi.

(a) Calculate the equivalent airspeed, in “ft/s.” Assume that the standard sea-level atmospheric density is used as a reference value, in order to determine equivalent airspeed.

(b) If the outside air temperature (independently measured) is 20 °F, calculate the true airspeed, in “ft/s.” What is the error (%) of equivalent airspeed?

Hints . . .
- A Pitot-static probe measures dynamic pressure: \( p_0 - p \)
- The error of equivalent airspeed is: \( \left( \frac{V_{\text{true}} - V_e}{V_{\text{true}}} \right) \times 100 \)