ME 4/549 Flow Rate Calculation Exercises
Spring 2006

For a fan curve experiment the following flow bench measurements are recorded.

Zone box thermistor	11105 Ω
Thermocouple upstream of nozzle	-2.102×10^{-6} V
Nozzle diameter	1.022 inch
Ambient pressure	751.8 mm Hg
Plenum pressure transducer	2.784 V
Nozzle pressure transducer	1.665 V

The thermocouple upstream of the nozzle is a type T. The plenum pressure is measured with the Omega PX653-0.5D5V transducer (0–0.5 inch H_2O). The flow nozzle pressure differential is measured with the Omega PX653-10D5V transducer (0–10 inch H_2O).

What is the pressure rise across the fan in Pascals, and in inches of H_2O? What is the flow rate through the fan in m^3/s and in CFM?