ENSC-283

Assignment #8

Assignment date: Monday Mar. 23, 2009

Due date: Monday Mar. 30, 2009

Problem1: (Noncircular conduit)

Air at a temperature of $50℃$ and standard pressure flows from a furnace through a $20-\text{cm}-\text{diameter}$ pipe with an average velocity of $3\,m/s$. It then passes through a transition section and into a square duct whose side is of length a. The pipe and duct surfaces are smooth. Determine the duct size, a if the head loss per meter is to be the same for the pipe and the duct.

Problem 2: (Flow from a water tower: flow rate unknown)

A fire protection system is supplied from a water tower and standpipe $24\,m$ tall. The longest pipe in the system is $180\,m$ and is made of cast iron about 20 years old. The pipe contains one gate valve; other minor losses maybe neglected. The pipe diameter is $10\,cm$. Determine the maximum rate of flow (m^3/s) through this pipe.