

Name: _____.

Mini-Exam I

CM 3110

September 17, 2008

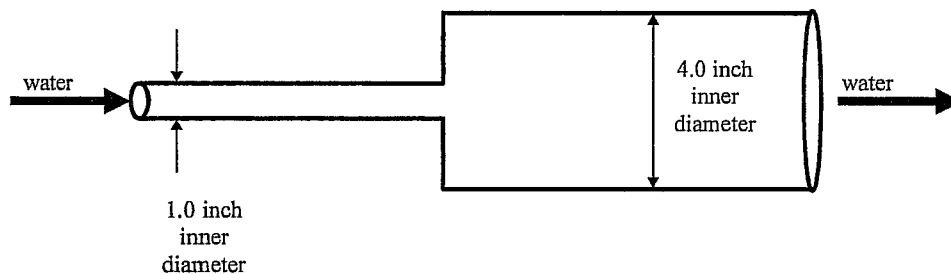
Note:

Significant figures count.

Please box your final answers.

Please be neat.

1. (50 points) Water flows at 4.5 gallons per minute in the device shown below. What is the average velocity of the water in the small pipe? What is the average velocity of the water in the large pipe? Please give your answer in m/s.



2. (50 points) Glycerol is a Newtonian fluid, and the viscosity of glycerol is 1.069 Pa s. Glycerol is sheared in the apparatus that Newton used (drawn schematically below). The force on the top plate is 125 mN (mili-Newton), and it is directed in the z-direction. The top and bottom plates are 5.0 cm by 5.0 cm. What is the velocity of the top plate?

