

Name: _____.

Mini-Exam I

CM 3110

September 18, 2007

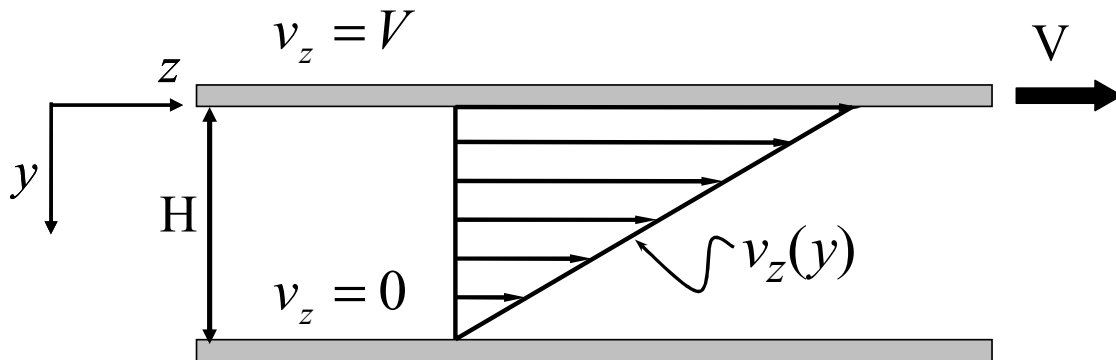
Note:

Significant figures count.

Please box your final answers.

Please be neat.

1. (50 points) Glycerol is a Newtonian fluid, and the viscosity of glycerol is 1.069 Pa s. If glycerol is sheared in the apparatus that Newton used (drawn schematically below) at a shear rate (shear rate = dv_z/dy) of 1.5 s^{-1} , what is the value of the shear stress τ_{yz} that will be generated? Please give your answer in Pa.



2. (50 points) Blue Fluid 175 (density = 1.75 g/cm^3) is used to measure a process stream pressure P_1 with the manometer shown in the figure below. What is the pressure P_1 ? Please give your answer in Pa. The density of air is much smaller than the density of Blue Fluid. The tube is circular in cross-section, and diameter of the tube is 1.0cm.

