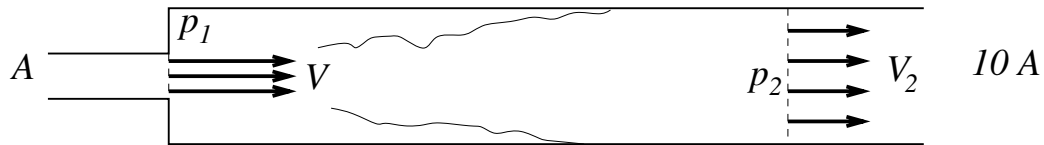


F7. A pipe of cross-sectional area  $A$  suddenly increases to an area of  $10A$ . The air velocity in the pipe is  $V$ , and the pressure at station 1 is  $p_1$ . After undergoing mixing in the larger pipe, the velocity becomes uniform again at station 2, where the velocity is  $V_2$ , and the pressure is  $p_2$ . Assume the density  $\rho$  is constant everywhere (low speed flow). Be sure to clearly draw the control volume you will be using.



- Determine the velocity  $V_2$ .
- Determine the pressure difference  $p_2 - p_1$ .