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$$Re = \frac{v D}{\nu} = 2000 + 100 \times \frac{110}{2} = 8000$$

$$\therefore v = \frac{Re \, \nu}{D} = \frac{8000 \times 10^{-6}}{0.5} = 16 \times 10^{-3}$$

Mass conservation

$$A_1 V_1 = A_2 V_2$$

$$\therefore D_1^2 V_1 = D_2^2 V_2$$

$$16 \times 10^{-3} \times \frac{D_1^2}{D_2^2} \times 100 = V_2 \quad \therefore V_2$$

$$\therefore V_2 = \frac{16 \times 10^{-1}}{} = 1.6 \ ms^{-1}$$

Now $Re = 1.6 \times 10^6 \times 0.05 = 80000$

$$I = 0.16 \times (80000)^{-1/8} = 0.039$$

$$K = \frac{3}{2}(1.6 \times I)^2$$

$$= 0.0058$$

$$G = \frac{(0.04)^{0.16} \times (K)^{3/2}}{0.08 \times 0.09} = 0.01149$$

- I had to redo assignment 1 because of a typo. This contains the updated file.