1. 4.35 (same number in *Fourth edition*)
   Water flows in the 5-cm-diameter pipe shown in Fig. P4.35 with an average velocity of 10 m/s. It turns a 90° angle and flows radially between two parallel plates. What is the velocity at a radius of 60 cm? What are the mass flux and the discharge?

![Fig. P4.35](image)

2. 4.52 (same number in *Fourth edition*)
   In Fig. P4.52, if the mass of the control volume is not changing, find $\bar{V}_3$.

![Fig. P4.52](image)
3. 4.79 (same number in *Fourth edition*)
In Fig. P4.79, neglect all losses and predict the value of \( H \) and \( p \) if:
(a) \( h = 15 \text{ cm} \)  
(b) \( h = 20 \text{ cm} \)

![Fig. P4.79](image)

4. 4.82 (same number in *Fourth edition*)
Water exits from a pressurized reservoir as shown in Fig. P4.82. Calculate the flow rate if on section \( A \) we:
(a) Attach a nozzle with exit diameter 5 cm  
(b) Attach a diffuser with exit diameter 18 cm  
(c) Leave as an open pipe as shown  
Neglect losses for all cases.

![Fig. P4.82](image)

5. 3.54 (same number in *Fourth edition*)
A pitot tube is used to measure the velocity of a small aircraft flying at 3000 ft. Calculate its velocity if the pitot tube measures:
(a) 0.3 psi  
(b) 0.9 psi  
(c) 0.09 psi

6. 3.68 (same number in *Fourth edition*)
For the flow shown in Fig. P3.68, estimate the pressure \( p_1 \) and velocity \( V_1 \) if \( V_2 = 20 \text{ m/s} \) and:
(a) \( H = 1 \text{ cm} \)  
(b) \( H = 5 \text{ cm} \)  
(c) \( H = 10 \text{ cm} \)
7. 13.9 (same number in Fourth edition)
Calculate the flow rate of 40°C water in the pipes shown in Fig. P13.9.
8. 4.123 (same number in *Fourth edition*)
Neglect viscous effects, assume uniform velocity profiles, and find the horizontal force component acting on the obstruction shown in Fig. P4.123.

![Fig. P4.123](image)

9. 4.131 (same number in *Fourth edition*)
Water flows steadily through the double elbow shown in Fig. P4.131. Water flows into the elbow from the top at 5 m/s, and from the left at 15 m/s. Determine the vertical and horizontal components of the force needed to hold the elbow in place.

![Fig. P4.131](image)

10. 4.164 (same number in *Fourth edition*)
A four-armed water sprinkler has nozzles at right angles to the 30-cm-long arms and at 45° angles with the ground. If the outlet diameters are 8 mm and 4 kg/s of water exits the four nozzles, find the rotational speed.