

**Known Typographical Errors in the First Edition, First Printing of
Study Guide for Basic Fluid Mechanics
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These are all of the known typographical errors as of November 19, 2001.

1. Page 23, Equations (3.21) and (3.22): In the second equality in each equation, the values of $z_\ell = 4h$ and $z_r = 3h$ are inverted. The correct equations are as follows.

$$(z_{cp})_\ell = \bar{z}_\ell + \frac{I}{\bar{z}_\ell A} = 4h + \frac{\frac{64}{3}h^4}{(4h)(16h^2)} = 4h + \frac{1}{3}h = \frac{13}{3}h \quad (3.21)$$

$$(z_{cp})_r = \bar{z}_r + \frac{I}{\bar{z}_r A} = 3h + \frac{\frac{64}{3}h^4}{(3h)(16h^2)} = 3h + \frac{4}{9}h = \frac{31}{9}h \quad (3.22)$$

2. Page 48, Equation (4.24): Replace $\mathbf{u}(2L, 0)$ with $\mathbf{u}(2L, y)$.
3. Page 70, Problem 5.9, next to last line in the Statement of the Problem: Replace 60 km/sec with 60 m/sec.
4. Page 85, last paragraph, line 3: Replace diameter r with radius r .
5. Page 91, Problem 6.9: The Statement of the Problem should read as follows.

An incompressible fluid flows in a pipe with branches as shown below. The flow is steady, inviscid and no body forces are acting. Solve for U_1 and the pressure difference $p_4 - p_1$ as a function of p_2 , ρ , U and atmospheric pressure, p_o . Assume velocity and pressure are constant on all cross sections, all of which are circular. Also assume the fluid exerts no net force on the pipe in the x direction.

6. Page 93, Equation (6.74): The last terms on the final two lines of the equation are incorrect. The correct equation is as follows.

$$\begin{aligned} \oint_S \rho u (\mathbf{u} \cdot \mathbf{n}) dS &= \rho U_1 (\mathbf{u}_1 \cdot \mathbf{n}_1) \frac{\pi}{4} (5d)^2 + \rho U \cos 30^\circ (\mathbf{u}_2 \cdot \mathbf{n}_2) \frac{\pi}{4} d^2 \\ &\quad + \rho(0) (\mathbf{u}_3 \cdot \mathbf{n}_3) \frac{\pi}{4} (2d)^2 + \frac{1}{25} \rho U (\mathbf{u}_4 \cdot \mathbf{n}_4) \frac{\pi}{4} (5d)^2 \\ &= -\frac{25\pi}{4} \rho U_1^2 d^2 - 0.866 \frac{\pi}{4} \rho U^2 d^2 + \frac{\pi}{100} \rho U^2 d^2 \\ &= -\frac{25\pi}{4} \rho U_1^2 d^2 - 0.826 \frac{\pi}{4} \rho U^2 d^2 \end{aligned}$$

7. Page 93, Equation (6.75): The coefficients of the terms proportional to $\rho U^2 d^2$ are incorrect. The correct equation is:

$$\oint_S \rho u (\mathbf{u} \cdot \mathbf{n}) dS = -\frac{25\pi}{4} \rho \left(\frac{8}{25} U \right)^2 d^2 - 0.826 \frac{\pi}{4} \rho U^2 d^2 = -3.386 \frac{\pi}{4} \rho U^2 d^2$$

8. Page 94, Equation (6.78): The coefficient of the term on the left-hand side is incorrect. The correct equation is:

$$-3.386 \frac{\pi}{4} \rho U^2 d^2 = -\frac{25\pi}{4} (p_4 - p_1) d^2 + 0.866 \frac{\pi}{4} (p_2 - p_o) d^2$$

9. Page 94, Equation (6.79): The coefficient of the second term on the right-hand side is incorrect. The correct equation is:

$$p_4 - p_1 = 0.035 (p_2 - p_o) + 0.135 \rho U^2$$