Solutions

2.1

- $t_{1/2} = 0.693\, V_d/CL$: apparent volume, volume cleared per hour ✓.

2.2

- ~97 % (90 % at 3.3) ✓.

2.3

- $0.693 \times 20/4 = 3.5$ h ✓.

3.1

- $t_{1/2} = 0.693 \times 60/3 = 13.9$ h ✓.
- 97 % at 5 half-lives ≈ 69 h ✓.
- Loading: 8 mg/L × 60 L = 480 mg (illustrative) ✓.
- CL halved: $t_{1/2}$ doubles to 27.7 h, steady state later, levels higher on the same schedule ✓.

3.2

- First pass: liver extraction differs – B loses 50 %, A 10 % ✓.
- 200 mg × 0.9 = 180 mg vs 200 mg × 0.5 = 100 mg circulating ✓.
- Bypass removes the extraction: B's F rises toward 1.0 and exposure grows on the same tablet ✓.