2.1. (a) $\frac{20}{3}$, (b) $\frac{71}{60}$, (c) $\frac{4\ln 2}{3}$, (d) $\frac{1}{4}\left(e-\frac{1}{e}\right)$, (e) $\frac{3\pi R^4}{2}$, (f) $\frac{2ab\pi}{3}$, (g) π, (h) $\frac{8}{3}$, (i) $-\frac{135}{4}$.

2.2. (a) $I=\int\limits_0^6 dx\int\limits_{x/2}^3 f(x,y)dy$, (b) $I=\int\limits_0^1 dy\int\limits_{y^2/2}^{1-\sqrt{1-y^2}} f(x,y)dx+\int\limits_1^2 dy\int\limits_{y^2/2}^2 f(x,y)dx+\int\limits_0^1 dy\int\limits_{1+\sqrt{1-y^2}}^2 f(x,y)dx$,

(c) $I=\int\limits_{-1}^1 dy\int\limits_0^{\sqrt{1-y^2}} f(x,y)dx$, (d) $I=\int\limits_0^1 dx\int\limits_{-\sqrt{1-x^2}}^{\sqrt{1-x^2}} f(x,y)dy$, (e) $I=\int\limits_0^{\sqrt{2}} dx\int\limits_x^{\sqrt{4-x^2}} f(x,y)dy$.

2.3. (a) $\frac{1}{6}$, (b) $\frac{15}{8}-2\ln 2$, (c) 1.

2.4. (a) $\frac{1}{2}$, (b) $\frac{e-1}{2}$, (c) $\frac{\pi}{12e}\left(1-\frac{1}{e^3}\right)$, (d) 1.

2.5. (a) $I=\frac{\ln 2}{2}-\frac{5}{16}$, $S_{\Delta ABC}=\frac{\sqrt{3}}{2}$, $V_{OABC}=\frac{1}{6}$; (b) $I=\frac{\pi}{15}$, $S=\pi$, $V=\frac{\pi}{6}$.

2.6. (a) $\frac{\pi}{2}$, (b) $\frac{\pi}{3}$, (c) 4π, (e) 20π.

2.7. (a) $V_1=\frac{16\pi}{3}-\frac{64}{9}, V_2=\frac{16\pi}{3}+\frac{64}{9}$; (b) $\frac{3\pi}{2}$.

2.8. (a) $\frac{\pi}{2}$, (b) $\frac{49}{5}$, (c) 6π, (d) $\frac{4\pi a^3}{\sqrt{3}}$.