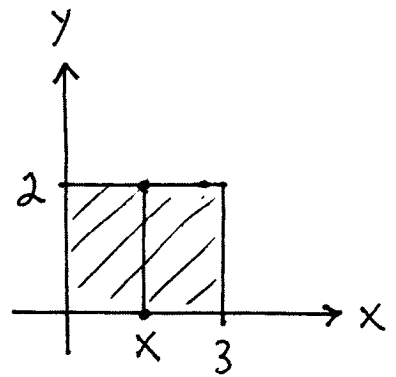


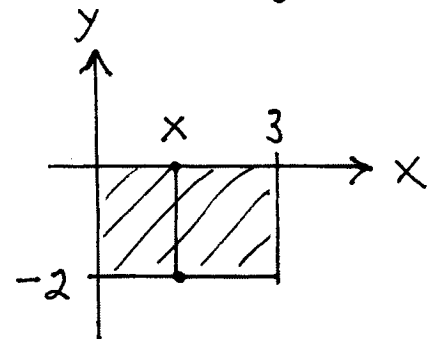
Section 15.1

$$\begin{aligned}
 5.) \int_0^3 \int_0^2 (4-y^2) dy dx \\
 &= \int_0^3 (4y - \frac{1}{3}y^3) \Big|_0^2 dx \\
 &= \int_0^3 (8 - \frac{8}{3}) dx = \int_0^3 \frac{16}{3} dx \\
 &= \frac{16}{3} x \Big|_0^3 = 16
 \end{aligned}$$



$$6.) \int_0^3 \int_{-2}^0 (x^2 y - 2xy) dy dx$$

$$\begin{aligned}
 &= \int_0^3 (x^2 \cdot \frac{1}{2}y^2 - xy^2) \Big|_{y=-2}^{y=0} dx \\
 &= \int_0^3 [0 - (2x^2 - 4x)] dx = \int_0^3 (4x - 2x^2) dx \\
 &= (2x^2 - \frac{2}{3}x^3) \Big|_0^3 = 18 - 18 = 0
 \end{aligned}$$



$$12.) \int_{\pi}^{2\pi} \int_0^{\pi} (\sin x + \cos y) dx dy$$

$$\begin{aligned}
 &= \int_{\pi}^{2\pi} (-\cos x + x \cos y) \Big|_{x=0}^{x=\pi} dy \\
 &= \int_{\pi}^{2\pi} [(-\cos \pi + \pi \cos y) - (-\cos 0 + 0)] dy \\
 &= \int_{\pi}^{2\pi} (1 + \pi \cos y + 1) dy = \int_{\pi}^{2\pi} (2 + \pi \cos y) dy \\
 &= (2y + \pi \sin y) \Big|_{\pi}^{2\pi} = (4\pi + \pi \sin 2\pi) - (2\pi + \pi \sin \pi) \\
 &= 2\pi
 \end{aligned}$$

