

#4 $(27 - 5\sqrt{5})/12$

#10 $8(2 - \sqrt{2})\pi$

#16 a) $x = u, y = 1 - u, z = v, -1 \leq v \leq 1$

b) $x = u, y = 5 + 2v, z = v, 0 \leq u \leq 3$

#22 $x = r \cos \theta, y = r \sin \theta, z = r^2(\cos^2 \theta - \sin^2 \theta)$

#24 $x = r \cos \theta, y = r \sin \theta, z = r, r \leq 3$

#30 $z = x^2 + y^2, 0 \leq z \leq 4$

#38 a) $\pi/2 \leq \varphi \leq \pi, 0 \leq \theta \leq 2\pi$

b) $0 \leq \varphi \leq \pi/2, 0 \leq \theta \leq \pi/2$

#40 $u = 1, v = 2, r_u \times r_v = -4i - 2j + 8k, 2x + y - 4z = -6$

#42 $r_u \times r_v = 2i - j - 3k, 2x - y - 3z = -4$

#46 $\frac{\sqrt{2}}{12}\pi^3$

#48 True

#50 True