3. $z = 2 - x - y$

y's

$0 = 2 - x - y$

$y = 2 - x$

x's

$z = 2 - x - y$

$0 = 2 - x - 0$

$x = 2$

$$V = \int_{x=0}^{x=2} \int_{y=0}^{y=2-x} \int_{z=0}^{z=2-x-y} dz\, dy\, dx$$

$$= \int_{x=0}^{x=2} \int_{y=0}^{y=2-x} \Big[z \Big]_{z=0}^{z=2-x-y} dy\, dx$$

$$= \int_{x=0}^{x=2} \int_{y=0}^{y=2-x} (2 - x - y - 0)\, dy\, dx$$

$$= \int_{x=0}^{x=2} \int_{y=0}^{y=2-x} (2 - x - y)\, dy\, dx$$

$$= \int_{x=0}^{x=2} \Big[2y - xy - \tfrac{1}{2}y^2 \Big]_{y=0}^{y=2-x} dx$$

$$= \int_{x=0}^{x=2} \Big[2(2-x) - x(2-x) - \tfrac{1}{2}(2-x)^2 - (0) \Big] dx$$

$$= \int_{x=0}^{x=2} \Big(4 - 2x - 2x + x^2 - \tfrac{1}{2}(4 - 4x + x^2) \Big) dx$$

$$= \int_{x=0}^{x=2} \Big(4 - 4x + x^2 - 2 + 2x - \tfrac{1}{2}x^2 \Big) dx$$

$$= \int_{x=0}^{x=2} \Big(\tfrac{1}{2}x^2 - 2x + 2 \Big) dx$$

$$= \Big[\tfrac{1}{2} \cdot \tfrac{1}{3}x^3 - 2 \cdot \tfrac{1}{2}x^2 + 2x \Big]_{x=0}^{x=2}$$

$$= \Big[\tfrac{1}{6}x^3 - x^2 + 2x \Big]_{x=0}^{x=2}$$

$$= \tfrac{1}{6}(2)^3 - (2)^2 + 2(2) - \Big(\tfrac{1}{6}(0)^3 - 0^2 + 2(0) \Big)$$

$$= \tfrac{8}{6} - 4 + 4$$

$$= \boxed{\tfrac{4}{3}}$$