

$$4. \quad z = 4 - x^2 - y^2 \quad \text{AND} \quad z = 0$$

$$\int_{x=-2}^{x=2} \int_{y=-\sqrt{4-x^2}}^{y=\sqrt{4-x^2}} \int_{z=0}^{z=4-x^2-y^2} dz \, dy \, dx$$

y's

$$z = 4 - x^2 - y^2$$

$$0 = 4 - x^2 - y^2$$

$$y^2 = 4 - x^2$$

$$y = \pm \sqrt{4 - x^2}$$

x's

$$z = 4 - x^2 - y^2$$

$$0 = 4 - x^2 - 0^2$$

$$x^2 = 4$$

$$x = \pm \sqrt{4}$$

$$x = \pm 2$$