

3.39 Ellipsoid

Semi-axes: a, b, c

Volume: V

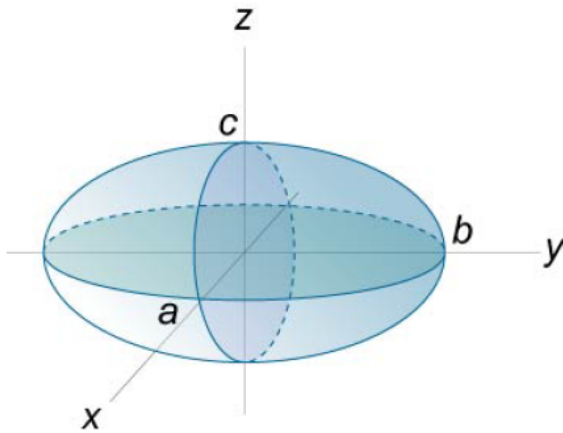


Figure 56.

355. $V = \frac{4}{3} \pi abc$

Prolate Spheroid

Semi-axes: a, b, b ($a > b$)

Surface area: S

Volume: V

$$356. \quad S = 2\pi b \left(b + \frac{a \operatorname{arcsin} e}{e} \right),$$

$$\text{where } e = \frac{\sqrt{a^2 - b^2}}{a}.$$

$$357. \quad V = \frac{4}{3}\pi b^2 a$$

Oblate Spheroid

Semi-axes: a, b, b ($a < b$)

Surface area: S

Volume: V

$$358. \quad S = 2\pi b \left(b + \frac{a \operatorname{arcsinh} \left(\frac{be}{a} \right)}{be/a} \right),$$

$$\text{where } e = \frac{\sqrt{b^2 - a^2}}{b}.$$

$$359. \quad V = \frac{4}{3}\pi b^2 a$$