3.33 Frustum of a Right Circular Cone

Radius of bases: R, r
Height: H
Slant height: m
Scale factor: k
Area of bases: S_1, S_2
Lateral surface area: S_L
Total surface area: S
Volume: V

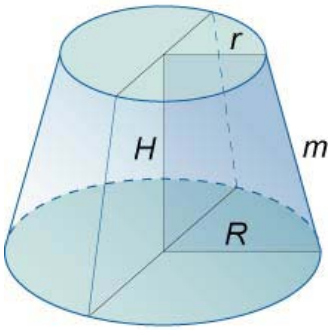

Figure 50.

333. $H = \sqrt{m^2 - (R - r)^2}$

334. $\frac{R}{r} = k$

335. $\frac{S_2}{S_1} = \frac{R^2}{r^2} = k^2$

336. $S_L = \pi m(R + r)$

337. $S = S_1 + S_2 + S_L = \pi\left[R^2 + r^2 + m(R + r)\right]$

338. $V = \frac{h}{3}\left(S_1 + \sqrt{S_1 S_2} + S_2\right)$

339. $V=\frac{hS_1}{3}\left[1+\frac{R}{r}+\left(\frac{R}{r}\right)^2\right]=\frac{hS_1}{3}\left[1+k+k^2\right]$