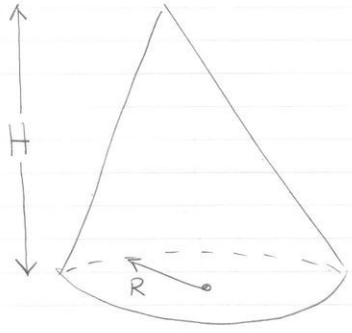
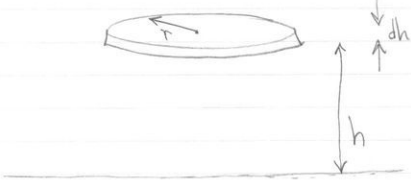


Cone of height H, radius R.

If it has uniform density ρ, where is center of mass?

Must be along the central vertical axis of the cone, by symmetry. But how far above the base?

Break cone into slices. Consider a slice



h above ground
dh thickness

If has a radius

$$r = R\left(1-\frac{h}{H}\right)$$

So this slice has

volume $$dV = \pi r^2 dh = \pi R^2\left(1-\frac{h}{H}\right)^2 dh$$

mass $$dm = \rho dV = \rho\pi R^2\left(1-\frac{h}{H}\right)^2 dh$$