A cylinder has circular base of radius R and height H, both measured in feet.

1. What is the volume of the cylinder?
2. Write down as many different integrals as you can for computing this volume.
3. Do at least two of these integrals.

For some integrals, you may wish to use the fact that

$$\cos(2\alpha) = 2\cos^2\alpha - 1 = 1 - 2\sin^2\alpha$$