1 The slice of cake

(a) Write down a triple integral representing the volume of a slice of the cylindrical cake of height $2''$ and radius $5''$ between the planes $\phi = \pi/6$ and $\phi = \pi/3$. Evaluate this integral

(b) Where is the center of mass of the slice? (Assume constant density.)

2 The bead

Suppose W is the region *outside* the cylinder $x^2 + y^2 = 1$ and *inside* the sphere $x^2 + y^2 + z^2 = 2$. Calculate

$$Q = \int_W \left(x^2 + y^2\right)\, dV$$

3 The cone (wrapup)

After completing the cone activity, write down and evaluate a multiple (double or triple) integral for the volume of the cone.