

1. Show: $\cos^2 \theta \equiv \frac{1}{2}(\cos(2\theta) + 1)$

2. Evaluate: $\int \sin^2(x) dx$

3. Use *cylindrical shells* to find the volume of a sphere with radius R .

4. Use disks to find the volume of the ellipsoid generated by rotating the ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ around the x -axis. As always, be sure to start with a picture and a volume element, dV .

5. Revisit the ellipsoid question with *cylindrical shells*.