

Worksheet for Sections 14.5-14.7

1. Find the volume V of the solid region in the first octant bounded by the planes $x = 0$ and $z = 0$, the cylinder $x^2 + y^2 = 5y$ and the sphere $x^2 + y^2 + z^2 = 25$. Set up the integral and if you have time at the end, come back and evaluate it. (The integration is not particularly difficult.)

2. Find the mass of an object occupying a ball of radius a if the mass density at any point is equal to its distance from the outer boundary of the ball.

3. A flywheel is in the shape of a solid cylinder that has a radius of 15 centimeters, thickness of 3 centimeters, and mass of 2 kilograms. Assume that the density of the flywheel is constant, denoted by δ . Find the moment of inertia I about the central axis.