Calculus

Name_____

Paperweight Volumes

Find each of the following volumes for solids who are formed from regions with known cross sections.

1. Find the volume of solid S whose base is the region in the xy-plane bounded by the curves $y = x^2$ and $y = 8 - x^2$ and whose cross-sections perpendicular to the x-axis are squares with one side in the xy-plane.

2. Find the volume of solid S whose base is the region in the xy-plane bounded by the x-axis, y-axis and line $y = -x + 5$ and whose cross-sections perpendicular to the y-axis are equilateral triangles with one side in the xy-plane.

3. Find the volume of solid S whose base is the region in the xy-plane bounded by the x-axis, y-axis and line $y = -x + 5$ and whose cross-sections perpendicular to the x-axis are semicircles with diameters in the xy-plane.

4. Find the volume of solid S whose base is a circle of radius 2 and whose cross-sections perpendicular to the x-axis are isosceles right triangles with their hypotenuses in the xy-plane.

5. Find the volume of solid S who is built from an ellipse with a semi-major axis of 4 and a semi-minor axis of 2 in the xy-plane and whose cross-sections perpendicular to the y-axis are circles with their diameters in the xy-plane.