Spring 2009 Math 152

Week in Review 2

courtesy: Amy Austin

(covering sections 6.2)

Section 6.2

1. Find the volume of the solid obtained by revolving the region bounded by $y = \frac{1}{x}$, $y = 0$, $x = 1$, $x = 2$ about the x-axis.

2. Find the volume of the solid obtained by revolving the region bounded by $y = 3x^5$, $y = 1$ and $x = 0$ about the y-axis.

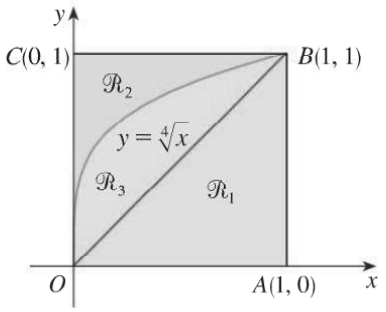
3. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$ and $y = 4x$ about the x-axis, then the y axis.

4. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$, $y = 4$, about the line $y = 4$.

5. Find the volume of the solid obtained by revolving the region bounded by $x = y^2$, $x = 1$, about the line $x = 1$.

6. Find the volume of the solid obtained by revolving the region bounded by $y = x$, $y = \sqrt{x}$, about the line $x = -1$.

7. Refer to the figure below to set up but do not evaluate an integral that finds the volume generated by rotating the given region about the specified line.



   (a) R_2 about BC

   (b) R_3 about AB

   (c) R_2 about AB

8. Find the volume of S where the base of S is the region bounded by $y = x^2$ and $y = \sqrt{x}$. The cross sections perpendicular to the x-axis are squares.

9. Find the volume of S where the base of S is the region bounded by $y = x^2$ and $y = \sqrt{x}$. The cross sections perpendicular to the y-axis are squares.

10. Find the volume of the solid S where the base of S is the region bounded by $y = x^2$ and $y = 4$. The cross-sections perpendicular to the y axis are equilateral triangles.

11. Find the volume of the solid S where the base of S is the triangular region with vertices $(0, 0)$, $(2, 0)$ and $(0, 4)$. Cross-sections perpendicular to the x axis are semi-circles.

12. Find the volume of the solid S where the base of S is the ellipse $\frac{x^2}{4} + \frac{y^2}{16} = 1$. Cross sections perpendicular to the x-axis are isosceles triangles where the base and height are equal.