Spring 2013 Math 152

Week in Review 2

courtesy: Amy Austin

(covering section 7.1-7.2)

Section 7.1

1. Find the area bounded by $y = \cos x$, $y = 0$, $x = 0$, $x = \dfrac{\pi}{3}$.
2. Find the area bounded by $y = \sin x$, $y = 0$, $x = \dfrac{\pi}{4}$, $x = \dfrac{3\pi}{2}$.
3. Find the area bounded by $y = x^2$ and $y = 2x - x^2$.
4. Find the area bounded by $y = x - 1$ and $y^2 = 2x + 6$.
5. Find the area bounded by $y = x^2 + 1$, $y = 3 - x^2$, $x = -1$, $x = 2$.
6. Find the area of the region bounded by the parabola $y = 2x^2$, the tangent line to this parabola at $(3, 18)$ and the x-axis.

Section 7.2

7. Find the volume of the solid obtained by revolving the region bounded by $y = e^x$, $y = 0$, $x = 0$, $x = 1$ about the x-axis.
8. Find the volume of the solid obtained by revolving the region bounded by $y = 3x^2$, $y = 12$, $x = 0$ about the y-axis.
9. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$, $y = 4x$, about the x-axis, then the y axis.
10. Find the volume of the solid obtained by revolving the region bounded by $y = x^2$, $y = 4$, about the line $y = 4$.
11. Find the volume of the solid obtained by revolving the region bounded by $x = y^2$, $x = 1$, about the line $x = 1$.
12. Find the volume of the solid obtained by revolving the region bounded by $y = x$, $y = \sqrt{x}$, about the line $x = -1$.
13. Find the volume of the solid S described here: The base of S is the region bounded by $y = x^2$ and $y = 4$. Cross-sections perpendicular to the y axis are equilateral triangles.
14. Find the volume of the solid S described here: The base of S is the triangular region with vertices $(0, 0)$, $(3, 0)$ and $(0, 2)$. Cross-sections perpendicular to the x axis are semi-circles.
15. Find the volume of the solid S described here: The base of S is the ellipse $\dfrac{x^2}{4} + \dfrac{y^2}{16} = 1$. Cross sections perpendicular to the y-axis are squares.