Spring 2012 Math 152
Week in Review 2
courtesy: Amy Austin
(covering section 7.1-7.2)

Section 7.1

1. Find the area bounded by $y = \cos x$, $y = 0$, $x = 0$, $x = \frac{\pi}{3}$.

2. Find the area bounded by $y = \sin x$, $y = 0$, $x = \frac{\pi}{4}$, $x = \frac{3\pi}{2}$.

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 $y = 2\cos(3x)$,
   
   $y = 2 - 2\cos(3x)$, $x = 0$, $x = \frac{\pi}{3}$.

6. Find the area of the region bounded by the parabola $y = x^2$, the tangent line to this parabola at (1,1) 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 $\frac{x^2}{4} + \frac{y^2}{16} = 1$. Cross sections perpendicular to the y-axis are squares.