MATH 150 Review Exam 7

1. Find the volume of the solid obtained by rotating the region bounded by the given curves about the specified axis.

   (a) $y = 2x, \quad y = x^2, \quad$ about the x-axis

   (b) $x = 0, \quad x = 9 - y^2, \quad$ about $x = -1$

2. Use shells to find the volume of the solid obtained by rotating the region bounded by $x = 1 + y^2, x = 0, y = 1$ and $y = 2$ about the x axis.

3. The height of a monument is 20 meters. A horizontal cross section at a distance x meters from the top is an equilateral triangle with side $\frac{x}{4}$ meters. Find the volume of the monument.

4. Find the average value of $f(x) = (x-3)^2$ on $[2, 5]$.

5. Find c such that $f_{ave} = f(c)$ for the previous problem.

6. Find the length of the following curve. $y = ln(sec\ x),\ 0 \leq x \leq \pi/4$

7. Find the area of the surface obtained by rotating $y = cosh\ x,\ 0 \leq x \leq 1$ about the x axis.

8. Find the area of the surface obtained by rotating $x = \frac{1}{3}(y^2 + 2)^{3/2},\ 1 \leq y \leq 2$ about the x axis.