MATH 160 Homework 30 Name: _____
Due 12/05 MATH 160 section _____

1. Write an integral that represents the volume of the solid obtained by rotating the region enclosed by the curve $y = x - x^9$ and the x-axis around the x-axis. Do not evaluate the integral.

2. Write an integral that represents the volume of the solid obtained by rotating the region enclosed by the curve $y = x - x^9$ and the x-axis around the y-axis. Do not evaluate the integral.

3. Find the volume of the solid obtained by rotating the region enclosed by $x = 12(y^2 - y^3)$ and the y-axis around

   a. the x-axis.

   b. the line $y = 8/5$.

4. Let
$$g(x) = \begin{cases} (\tan(x))^2/x, & 0 < x \leq \pi/4 \\ 0, & x = 0. \end{cases}$$

   a. Show that $xg(x) = (\tan(x))^2$, $0 \leq x \leq \pi/4$.

   b. Find the volume of the solid generated by rotating the region enclosed by $g(x)$, $x = \pi/4$, and the x-axis around the y-axis.

5. Consider the region enclosed by $x = 3y^2 - 2$, $x = y^2$, and the x-axis. This region is to be revolved around the x-axis to form a solid.

   a. Write an integral to find the volume of the region using cylindrical shells.

   b. Write an integral to find the volume of the region using cylindrical slabs.

   c. Find the volume of the region.