Math 1211 – Quiz #4 Fall 2011

Name:	**A#:**

1. Let $\mathcal{R}$ be the region bounded between the curves $y = x^2$ and $y = 6x - 2x^2$.

   (a) Sketch the region $\mathcal{R}$. Label all relevant points and curves.

   (b) Find the volume of the solid obtained by revolving $\mathcal{R}$ around the y-axis.

2. Give an **expression**, in terms of a definite integral, for the solid obtained by revolving the region $\mathcal{R}$ in Question #1 around the given axis. **Do not** evaluate these integrals!

   (a) The x-axis.

   (b) The line $x = 3$

   (c) The line $y = 8$

3. Find the average value of the function $f(t) = \dfrac{t}{\sqrt{9+t^2}}$ over the interval $[0, 4]$.

4. Integrate the following:

   (a) $\displaystyle\int \sin^{-1} x \, dx$

   (b) $\displaystyle\int_0^{\pi/4} x \cos 2x \, dx$

   (c) $\displaystyle\int \frac{\ln x}{\sqrt{x}} dx$