Math 229
Quiz 16
Due: 06/24/2008

Name:_____

This is a Take-Home Quiz. You may use your book and course notes, and you may consult with other members of the class, but you may not consult with outside tutors (at least not on these specific problems).

1. Evaluate each of the following indefinite integrals:

   (a) $\int (3x^2 + 2x + 1)dx$

   (b) $\int \left(\frac{3}{t^3} + 2t + 1\right) dt$

   (c) $\int (2x + 3)^2 dx$

   (d) $\int \frac{3x^5 - 6x^2 + 5}{x^2}\, dx$

   (e) $\int \frac{x^2 - 2x + 5}{\sqrt{x}} dx$

2. (a) If k is a constant then $\int k^3 dx =$

   (b) $\int k^3 dk =$

3. Solve each differential equation subject to the given initial conditions:

   (a) $f'(x) = 4x^3 - 6x + 2;\ f(1) = 7$

   (b) $f'(x) = 3x^2 + 2x + 5;\ f(2) = 25$

4. Assume that $\int_2^5 f(x)dx = 6$, $\int_{-1}^2 f(x)dx = 9$, $\int_{-1}^5 g(x)dx = 2$, and $\int_2^5 g(x)dx = -8$. Find

(a) $\int_2^5 f(x) + g(x)dx$

(c) $\int_{-1}^2 g(x)dx$

(b) $\int_{-1}^5 f(x)dx$

(d) $\int_{-1}^5 [2g(x) - f(x)]\,dx$

5. Evaluate the following definite integrals.

(a) $\int_1^5 (2x - 3)\ dx$

(c) $\int_1^4 \left(\sqrt{x} - 2\right)\ dx$

(b) $\int_{-1}^2 2x^3 - 4x + 5\ dx$

(d) $\int_1^2 \left(\frac{x-1}{x^3}\right)\ dx$