Calculus II, Exam II, Spring 2011

Name:_____

Student signature:_____

Show all your work and give reasons for your answers. Good luck!

Part I

Each problem in part I is worth 5 points; Show your work!!

Evaluate the following integrals

(1) $\int \frac{x^5+x^2}{x}\,dx$

(2) $\int \frac{x^3}{\sqrt[5]{2x^4+1}}\,dx$

(3) $\int_0^{\pi} \cos^3(x)\, dx$

(4) $\int x \cos(x)\, dx$

(5) $\int \frac{\cos(x)}{\sin^2(x)+1}\, dx$

(6) $\int \ln(x)\,dx$

(7) If $F(x) = \int_1^x t\sqrt{t^4+1}\,dt$, find $F'(x)$

(8) Set up a Riemann sum with 3 terms, using the midpoint rule, for $\int_1^7 \cos(x^2)\,dx$

(9) $\int \frac{x}{x^2-1}\,dx$

(10) $\int \frac{1}{x^2-1}\,dx$

Part II

Each problem in part II is worth 13 points. Justify all your work for full credit!!

Evaluate the following integrals.

1. $\int \sin^2(x)\cos^2(x)\,dx$

2. $\int e^x \sin(2x)\,dx$

3. If $v(t) = t^2 - t - 2$ is the velocity of a particle find **both** the displacement **and** the total distance traveled on the time interval $[0, 3]$.

4. $\int \frac{1}{x(x+1)^2}\, dx$

Scratch paper