Math 221 Calculus 2 Midterm Exam 1
Professor John Maginnis September 23, 2014

Your name: _____

Rec. Instr.: _____ Rec. Time: _____

Show all your work in the space provided under each question. Please write neatly and present your answers in an organized way. You may use your one sheet of notes, but no books or calculators. This exam is worth 60 points. The chart below indicates how many points each problem is worth.

Problem	1	2	3	4
Points	/8	/8	/8	/8
Problem	5	6	7	8
Points	/6	/10	/4	/8

1. Evaluate the integral.

$$\int \sin^3(x)\cos^4(x)\ dx$$

2. Evaluate the integral.

$$\int x^3\cos(x^2)\ dx$$

3. Use the substitution $u = x^2 + 1$ to evaluate the integral.

$$\int x\sqrt{x^2+1}\, dx$$

4. Use the trigonometric substitution $x = \tan(\theta)$ to evaluate the integral.

$$\int x\sqrt{x^2+1}\, dx$$

5. Evaluate the limit.

$$\lim_{x\to\infty} \frac{\ln(x)}{\sqrt{x}}$$

6. Evaluate the improper integral.

$$\int_1^\infty \frac{dx}{2x^2+3x-2}$$

7. Give the form for the partial fraction decomposition, but do not solve for the coefficients. (Example: $\frac{1}{x^2-1} = \frac{A}{x-1} + \frac{B}{x+1}$.)

$$\frac{1}{x^3(x^2+1)^2}$$

8. Evaluate the integral.

$$\int \frac{\ln(x)}{x^4}\, dx$$