

Name: _____

TA: _____

Math 222

Prof. Beck

First Exam

Fall 2005

1. Integrate:

$$\int \frac{\sec^3 x + e^{\sin x}}{\sec x} dx$$

2. Integrate:

$$\int \sin^4 3t \cos^4 3t dt$$

3. Integrate:

$$\int \frac{2x + 1}{x^2 + 2x + 2} dx$$

4. Evaluate:

$$\int_{\pi/6}^{\pi/4} x \sec^2 x \, dx$$

5. Integrate:

$$\int e^{-4x} \sin 3x \, dx$$

6. Integrate:

$$\int \frac{2x^2 + x - 4}{x^3 - x^2 - 2x} dx$$

7. Evaluate:

$$\int_{-\infty}^1 \frac{dx}{(2x - 3)^3}$$

8. Evaluate:

$$\int_0^{\pi/2} \frac{\sin x}{1 - \cos x} dx$$

9. Prove that $\lim_{n \rightarrow \infty} x_n = a$ if and only if $\lim_{n \rightarrow \infty} |x_n - a| = 0$.

10. Prove that a bounded increasing sequence is convergent.