

Name: _____

TA: _____

Math 222

Prof. Beck

First Exam

Fall 2005

1. Integrate:

$$\int e^x \sec e^x dx$$

2. Integrate:

$$\int \cos^3 3\theta \sin^{-2} 3\theta d\theta$$

3. Integrate:

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

4. Evaluate:

$$\int \frac{z^7}{(4 - z^4)^2} dz$$

5. Integrate:

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

6. Integrate:

$$\int \frac{17x - 3}{3x^2 + x - 2} dx$$

7. Evaluate:

$$\int_2^{\infty} \frac{\ln x}{x^2} dx$$

8. Evaluate:

$$\int_0^{\pi/4} \tan 2x \, dx$$

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.