

Math 32L Lab Quiz #1

Integrating to Infinity

Blake, Spring 2002

Name: _____

1. (5 points) What do we mean when we put “ ∞ ” as an upper bound in a definite integral; i.e., what does $\int_a^{\infty} f(t) dt$ mean?

2. (12 points) Consider the integral $\int_1^{\infty} e^{-t^4} dt$.

(a) Show that this integral must converge. *Do not use a calculator in this step.*

(b) Use your calculator to approximate the value of the integral accurate to two decimal places. Explain how you know you have two decimal place accuracy.

3. (6 points) Circle all integrals below which converge. You do not have to justify your answer.

$$\int_0^{\infty} \lambda e^{-\lambda t} dt \quad \int_0^{\infty} \lambda e^{\lambda t} dt \quad \int_1^{\infty} \frac{1}{t} dt \quad \int_1^{\infty} \frac{1}{t^{1.01}} dt \quad \int_1^{\infty} \frac{1}{t^{0.99}} dt \quad \int_2^{\infty} \frac{1}{\ln(t)} dt$$