

MATH 235 (SPRING 2014) QUIZ IV

WED APR, 29 2014

Name:

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Attempt all problems. Box your answers.

(1) Find the following definite and indefinite integrals:

(a) $\int_0^1 \frac{x}{x^2+1} dx.$

(b) $\int_1^2 \frac{x^2 e^x - 2x e^x}{x^4} dx.$

(c) $\int \frac{\ln(2x)}{x} dx.$

- (2) Using the definition of a definite integral as the limit of a Riemann sum, evaluate the integral

$$\int_2^4 x^2 + 1 dx$$

using a right sum formula.

- (3) An ant colony is slowly dying off in such a way that the number of ants $P(t)$ after t weeks is changing at a rate $P'(t) = -576.68(0.794)^t$.
- (a) Determine the number of ants that die in the first three weeks.
 - (b) Plot the graph of $P'(t)$, then interpret your answer as an area on your plot. Why is $P'(t)$ negative?