

Name: \_\_\_\_\_ 4/7/2016  
Math 202 Quiz 2

**Directions** Answer all questions in the space provided. Show all work and box your final answers. Answers with no work shown will not receive full credit. Good luck!

1. Evaluate the following three integrals.

(a) (8 points)  $\int e^x \cos x \, dx$

(b) (8 points)  $\int_0^3 x^3 \sqrt{9 - x^2} dx$

(c) (8 points)  $\int \frac{x^2 + 3x + 3}{x(x+2)^2} dx$

2. Approximate  $\ln(5) = \int_1^5 \frac{1}{x} dx$  in two different ways.

You can leave your answers as an arithmetic expression.

(a) (5 points) Midpoint rule with  $n = 4$  (i.e.  $M_n$ )

(b) (5 points) Simpson's Rule with  $n = 4$  (i.e.  $S_n$ )

3. (8 points) Evaluate the following integral or show that it diverges.

$$\int_0^{\infty} x e^{-x^2} dx$$

4. (8 points) Without attempting to evaluate it, determine whether the following integral converges or diverges. Justify your answer.

$$\int_1^{\infty} \frac{1}{\sqrt{x^5 + 2}} dx$$