

Name: \_\_\_\_\_

This Exam covers chapters 5.1 through 5.9

**Directions:** Complete all question and **show all applicable work.** Partial credit will be given. All questions are equally weighted.

1.) Integrate:

$$\int_0^1 x^2 + 2x - 4 \, dx$$

2.) Integrate:

$$\int x^2 \cos(x^3) \, dx$$

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3.) Integrate:

$$\int \sin^3(2x) dx$$

4.) Integrate:

$$\int e^x \sin x dx$$

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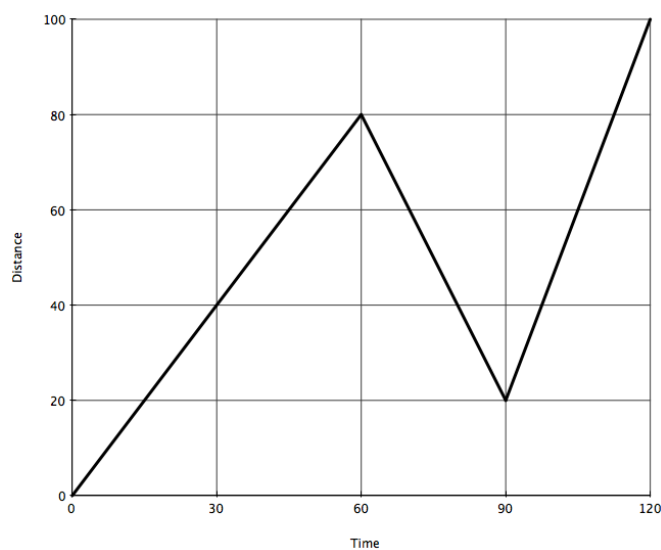
5.) Use the trapezoidal rule with 6 boxes to approximate the integral. What is the maximum error that can be expected?

$$\int_0^3 e^x dx$$

6.) Let  $f(x) = \int_1^{2x} t^3 \sin t dt$ . Compute  $f'(x)$ . (Hint: there IS an easy way to compute this without actually computing the integral out.)

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7.)



Using the graph above of  $f(x)$ , let  $F(x) = \int_0^x f(x)dx$  and compute:

- $F(0) =$
- $F(30) =$
- $F(60) =$
- $F(90) =$
- $F(120) =$

Now create a sketch of  $F$  below.