

Directions: Work all problems in the assignment. If you need more room use the back of the page to complete the problem.

**Section 6.1**

Problem 16. Find the indefinite integral.

$$\int \frac{4e^{2x}}{1 + e^{2x}} dx$$

Problem 34. Evaluate the indefinite integral.

$$\int \frac{6x + \sqrt{x}}{x} dx$$

Problem 66. **Revenue** A company sells a seasonal product that generates a daily revenue  $R$  (in dollars per year) modeled by

$$R = 0.06t^2(365 - t)^{1/2} + 1250 \quad 0 \leq t \leq 365$$

where  $t$  represents the day.

- (a) Find the average daily revenue over a period of one year.
- (b) Describe a seasonal product whose seasonal sales pattern resembles the model. Explain your answer.

## Section 6.2

Problem 24. Find the indefinite integral. (Hint: Integration by parts is not necessary in all cases in this section of the text.)

$$\int \frac{x}{\sqrt{x-1}} dx$$

Problem 30. Evaluate the definite integral.

$$\int_0^2 \frac{x^2}{e^x} dx$$

Problem 42. Find the indefinite integral using each specified method. Then write a brief statement explaining which method you prefer.

$$\int x\sqrt{4-x} \, dx$$

- (a) By parts, letting  $dv = \sqrt{4-x}$ .
- (b) By parts, letting  $u = \sqrt{4-x}$ .

Problem 62. **Revenue** A company sells a seasonal product. The revenue  $R$  (in dollars per year) generated by sales of the product can be modeled by

$$R = 410.5t^2e^{-t/30} + 25,000, \quad 0 \leq t \leq 365$$

where  $t$  represents the day.

- (a) Find the average daily revenue during the first quarter which is given by  $0 \leq t \leq 90$ .
- (b) Find the average daily revenue during the fourth quarter which is given by  $270 \leq t \leq 365$ .
- (c) Find the total daily receipts during the year.

### Section 6.3

Problem 22. Find the indefinite integral.

$$\int \frac{1}{4x^2 - 9} dx$$

Problem 38. Evaluate the definite integral.

$$\int_0^1 \frac{x^3 - 1}{x^2 - 4} dx$$

Student ID: \_\_\_\_\_

Dept. & Number: Math 1100

Lesson Number: 12

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

Address: \_\_\_\_\_  
Street Apt.

\_\_\_\_\_ City State Zip Code

\_\_\_\_\_

Date: \_\_\_\_\_

Grade: \_\_\_\_\_

Read By: \_\_\_\_\_

Comments: \_\_\_\_\_

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