Test Bank Exercises in

CHAPTER 10

(College Algebra Chapter 7)

Exercise Set 10.1

1. Solve the system of equations $\begin{cases} x + 4y = 7\\ 2x - 3y = 9 \end{cases}$ by the method of substitution.

2. Solve the system of equations $\begin{cases} 3x - 2y = 5 \\ 4x + y = 8 \end{cases}$ by the method of substitution.

3. Solve the system of equations $\begin{cases} 2x + 7y = 11 \\ 3x + 2y = 8 \end{cases}$ by the method of substitution.

4. Solve the system of equations $\begin{cases} x + y = 2 \\ x - y = 5 \end{cases}$ by the method of substitution.

5. Solve the system of equations $\begin{cases} 4x + 5y = 8\\ 5x + 4y = 9 \end{cases}$ by the method of substitution.

- 6. Use the method of substitution to find the point of intersection of the straight lines L_1 and L_2 whose equations are given below. Also, sketch the graph of both lines on the same coordinate axis. $L_1: 3x + 2y = 6; L_2: 2x + y = 4.$
- 7. Use the method of substitution to find the point of intersection of the straight lines L_1 and L_2 whose equations are given below. Also, sketch the graph of both lines on the same coordinate axis. $L_1: x - 2y = 3; L_2: 3x + y = 6.$
- 8. Use the method of substitution to find the point of intersection of the straight lines L_1 and L_2 whose equations are given below. Also, sketch the graph of both lines on the same coordinate axis. $L_1: 5x + 3y = 15; L_2: 3x - 4y = 12.$
- 9. Use the method of substitution to find the point of intersection of the straight lines L_1 and L_2 whose equations are given below. Also, sketch the graph of both lines on the same coordinate axis. $L_1: x - 5y = 10; L_2: 7x + 2y = 14.$

- 10. Use the method of substitution to find the point of intersection of the straight lines L_1 and L_2 whose equations are given below. Also, sketch the graph of both lines on the same coordinate axis. $L_1: x + y = 6; L_2: x - y = 4.$
- 11. Determine if the given system of equations $\begin{cases} x^2 y + 1 = 0 \\ x y 1 = 0 \end{cases}$ is consistent or inconsistent. 12. Determine if the given system of equations $\begin{cases} x^2 + y^2 = 1 \\ x + y = 2 \end{cases}$ is consistent or inconsistent. 13. Determine if the given system of equations $\begin{cases} x^2 - y^2 = 4 \\ 3x^2 + y^2 = 12 \end{cases}$ is consistent or inconsistent. 14. Determine if the given system of equations $\begin{cases} x^2 + y^2 = 1 \\ x^2 - y = 0 \end{cases}$ is consistent or inconsistent.

15. Determine if the given system of equations $\begin{cases} x^2 + y + 1 = 0 \\ x - y - 1 = 0 \end{cases}$ is consistent or inconsistent.

16. The values of *y* in the solutions for the systems of equations $\begin{cases} x + y^2 = 2\\ 2x + y = 3 \end{cases}$ are

- (a) 1 and -1/2 (b) -1 and 2
- (c) 1 and $\sqrt{2}$ (d) None of the above.

17. The values of y in the solutions for the systems of equations $\begin{cases} x^2 - y = 1 \\ x + y = 1 \end{cases}$ are (a) 0 and 3 (b) 1 and -2 (c) 1 and 2 (d) None of the above.

(a) 0 and 5 (b) 1 and -2 (c) 1 and 2 (d) None of the above.

18. The values of *y* in the solutions for the systems of equations $\begin{cases} x^2 + y^2 = 4 \\ x + y = 2 \end{cases}$ are

- (a) -2 and 1/2 (b) 1 and 2
- (c) 0 and 2 (d) None of the above.

19. The values of y in the solutions for the systems of equations $\begin{cases} y - \sqrt{x} = 0 \\ y - x^2 = 0 \end{cases}$ are (a) 0 and 3 (b) 1 and 0 (c) 1 and -1 (d) None of the above.

20. The values of y in the solutions for the systems of equations $\begin{cases} x^2 + y^2 = 9 \\ y - x = 3 \end{cases}$ are (a) $\sqrt{3}$ and 1 (b) 0 and 3 (c) 1 and 3 (d) None of the above. 21. The values of *y* in the solutions for the systems of equations $\begin{cases} x + y^2 = 2\\ 2x + y = 3 \end{cases}$ are

- (a) 1 and -1/2 (b) -1 and 2 (c) 1 $-12\sqrt{2}$ (b) N = 6.1 1
- (c) 1 and $\sqrt{2}$ (d) None of the above.

Exercise Set 10.2

- 1. A pile of 23 coins worth \$2.75 consists of nickels and quarters. Find the number of each type of coin in the pile.
- 2. A pile of 27 coins worth \$4.95 consists of dimes and quarters. Find the number of each type of coin in the pile.
- 3. A pile of 44 coins worth \$3.15 consists of nickels and dimes. Find the number of each type of coin in the pile.
- 4. A pile of 49 coins worth \$7.45 consists of nickels and quarters. Find the number of each type of coin in the pile.
- 5. A part of \$15,000 was invested at an annual interest rate of 8% and the remainder at 5%. If the total interest received at the end of one year is \$1,020, how much was invested at each rate?
- 6. A part of \$39,000 was invested at an annual interest rate of 11% and the remainder at 7.5%. If the total interest received at the end of one year is \$3,800, how much was invested at each rate?
- 7. A part of \$21,500 was invested at an annual interest rate of 10% and the remainder at 4%. If the total interest received at the end of one year is \$1,790, how much was invested at each rate?
- 8. A part of \$22,000 was invested at an annual interest rate of 9% and the remainder at 6%. If the total interest received at the end of one year is \$1,740, how much was invested at each rate?
- 9. The perimeter of a rectangle is 40 in. If the length is 3 in. more than the width, find the length and the width of the rectangle.
- 10. The perimeter of a rectangle is 65 in. If the length is 4 in. more than the width, find the length and the width of the rectangle.
- 11. The sum of two numbers is 56. Three times the larger plus five times smaller is 30. Find the two numbers.
- 12. The sum of two numbers is 81. Twice the larger plus three times the smaller is 28. Find the two numbers.
- 13. Car A travels 15 miles per hour faster than car B. If car A travels 300 miles in the same time that car B travels 250 miles, what is the speed of each car?

- 14. Car A travels 25 miles per hour faster than car B. If the car A travels 350 miles in the same time that car B travels 275 miles, what is the speed of each car?
- 15. A photography store sells sampler A, consisting of 8 rolls of color film and 5 rolls of black and white film for \$23. It also sells sampler B, consisting of 5 rolls of color film and 8 rolls of black and white film for \$21.20. What is the cost per roll of each type of film?
- 16. A photography store sells sampler A, consisting of 9 rolls of color film and 5 rolls of black and white film for \$30.50. It also sells sampler B, consisting of 5 rolls of color film and 9 rolls of black and white film for \$26.90. What is the cost per roll of each type of film?
- 17. A photography store sells sampler A, consisting of 5 rolls of color film and 3 rolls of black and white film for \$23.50. It also sells sampler B, consisting of 3 rolls of color film and 5 rolls of black and white film for \$20.50. What is the cost per roll of each type of film?
- 18. A supermarket mixes coffee that sells for \$2 per pound with coffee that sells for \$1.50 per pound to obtain 20 pounds of coffee selling for \$1.80 per pound. How much of each type of coffee must be used?
- 19. A supermarket mixes coffee that sells for \$2.50 per pound with coffee that sells for \$1.90 per pound to obtain 30 pounds of coffee selling for \$2 per pound. How much of each type of coffee must be used?
- 20. A supermarket mixes coffee that sells for \$2 per pound with coffee that sells for \$1.20 per pound to obtain 40 pounds of coffee selling for \$1.50 per pound. How much of each type of coffee must be used.

Exercise Set 10.3

1. Use the Gaussian elimination method to solve the system of equations

x - 2y + 4z = 22x + 6y + z = 2x + 4y + 5z = 2

2. Use the Gaussian elimination method to solve the system of equations

x + y + 3z = 33x + 2y + z = 22x + 4y - 2z = -4

3. Use the Gaussian elimination method to solve the system of equations

-x + 4y + 4z = 7x + 6y - 5z = 22x + 4y - 9z = -3