

Perform the indicated operation(s).

1. $\begin{bmatrix} 2 & 5 & -3 \\ -2 & -1 & 9 \end{bmatrix}$
See margin.
 $\begin{bmatrix} 2 & 5 & -4 \\ 3 & 0 & -2 \end{bmatrix} + \begin{bmatrix} 3 & 2 & 7 \\ -2 & -5 & 7 \end{bmatrix}$

2. $0.25 \begin{bmatrix} 8 & 20 & -12 \\ -8 & -4 & 36 \end{bmatrix}$

3. $-4 \left(\begin{bmatrix} 1 & 10 \\ -4 & -6 \end{bmatrix} - \begin{bmatrix} 4 & 8 \\ -3 & -8 \end{bmatrix} \right)$

4. $\begin{bmatrix} 4 & 1 & 4 \\ -1 & 8 & -3 \\ 4 & 3 & 0 \end{bmatrix} \begin{bmatrix} -2 \\ 2 \\ 6 \end{bmatrix} \begin{bmatrix} 18 \\ 0 \\ -2 \end{bmatrix}$

5. $\begin{bmatrix} -6 & 1 \\ 9 & 2 \end{bmatrix} \begin{bmatrix} 3 & 0 \\ -5 & 4 \end{bmatrix} \begin{bmatrix} -23 & 4 \\ 17 & 8 \end{bmatrix}$

6. $\begin{bmatrix} 0 & 1 & 0 \\ 2 & -1 & 1 \\ 0 & 2 & -1 \end{bmatrix} \begin{bmatrix} -1 & 2 & 0 \\ 4 & 6 & 0 \\ 1 & 0 & 1 \end{bmatrix}$ See margin.

Solve the matrix equation for x and y .

7. $\begin{bmatrix} -1 & y+6 \\ x-4 & 3 \end{bmatrix} = \begin{bmatrix} -1 & 8 \\ -9 & 3 \end{bmatrix}$
 $x = -5, y = 2$

8. $\begin{bmatrix} -22 & 9 \\ 1 & -y \end{bmatrix} = \begin{bmatrix} 2x & 9 \\ 1 & 4 \end{bmatrix}$
 $x = -11, y = -4$

9. $3 \begin{bmatrix} x & 1 \\ 8 & -4 \end{bmatrix} = \begin{bmatrix} -15 & 3 \\ y & -12 \end{bmatrix}$
 $x = -5, y = 24$

Evaluate the determinant of the matrix.

10. $\begin{vmatrix} 7 & -9 \\ -3 & 4 \end{vmatrix}$ 1

11. $\begin{vmatrix} -2 & -1 \\ 1 & -1 \end{vmatrix}$ 3

12. $\begin{vmatrix} 4 & 0 & 1 \\ 1 & 5 & 3 \\ 2 & 2 & 0 \end{vmatrix}$ -32

13. $\begin{vmatrix} -1 & 3 & 4 \\ 6 & 0 & -2 \\ 0 & -5 & 1 \end{vmatrix}$ -128

Find the area of the triangle with the given vertices.

14. $A(2, 1), B(5, 3), C(7, 1)$ 5

15. $A(-1, 0), B(-3, 3), C(0, 4)$ $\frac{11}{2}$

16. $A(-3, 2), B(-1, 4), C(-4, 3)$ 2

Use Cramer's rule to solve the linear system.

17. $2x + y = 12$ (9, -6)
 $5x + 3y = 27$

18. $-4x + 5y = -10$ (5, 2)
 $5x - 6y = 13$

19. $x + y = 2$ ($\frac{3}{2}, \frac{1}{2}$, 1)
 $2y - z = 0$
 $-x - y + z = -1$

20. $5x - 2y + 7z = 12$
 $2x + 5y + 3z = 10$
 $3x - y + 4z = 8$

Find the inverse of the matrix.

21. $\begin{bmatrix} 4 & 5 \\ 3 & 9 \end{bmatrix}$ See margin.

22. $\begin{bmatrix} -1 & -2 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ -1 & -1 \end{bmatrix}$

23. $\begin{bmatrix} -6 & 4 \\ 6 & -5 \end{bmatrix} \begin{bmatrix} -\frac{5}{6} & -\frac{2}{3} \\ -1 & -1 \end{bmatrix}$

24. $\begin{bmatrix} 1 & 0 \\ 0 & -5 \end{bmatrix} \begin{bmatrix} 1 & 0 \\ 0 & -\frac{1}{5} \end{bmatrix}$

Solve the matrix equation.

25. $\begin{bmatrix} 8 & 7 \\ 1 & 1 \end{bmatrix} X = \begin{bmatrix} 3 & -6 \\ -2 & 9 \end{bmatrix}$ See margin.

26. $\begin{bmatrix} 2 & 5 \\ 2 & 6 \end{bmatrix} X = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 3 & -\frac{5}{2} \\ -1 & 1 \end{bmatrix}$

27. $\begin{bmatrix} 1 & 0 \\ -6 & 2 \end{bmatrix} X = \begin{bmatrix} 10 & 6 & 8 \\ 4 & 12 & 2 \end{bmatrix}$

Use an inverse matrix to solve the linear system.

28. $x - y = 5$ (6, 1)
 $-2x + 3y = -9$

29. $3x + 2y = -8$ (-4, 2)
 $-2x + 5y = 18$

30. $2x - 7y = 6$ (-4, -2)
 $-3x + 11y = -10$

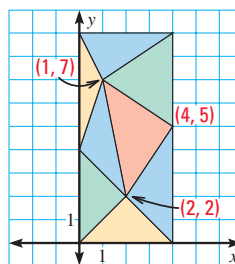
$\begin{bmatrix} 10 & 6 & 8 \\ 32 & 24 & 25 \end{bmatrix}$

31. **STAINED GLASS** You are making a stained glass panel using different colors as shown. The coordinates given are measured in inches. Find the area of the red triangle.

32. **DECODING** Use the inverse of $A = \begin{bmatrix} 2 & -1 \\ 3 & -1 \end{bmatrix}$ and the coding information on pages 225 and 226 to decode the message. **AN APPLE A DAY**

44, -15, 3, -1, 80, -32, 39, -17, 3, -1, 12, -4, 77, -26

33. **BUDGETING MEALS** You have \$18 to spend for lunch during a 5 day work week. It costs you about \$1.50 to make a lunch at home and about \$5 to buy a lunch. How many times each work week should you make a lunch at home? **2 times**



ADDITIONAL RESOURCES

- **Chapter 4 Resource Book**
Chapter Test (3 levels) (p. 81)
SAT/ACT Chapter Test (p. 87)
Alternative Assessment (p. 88)
- **Test and Practice Generator**

1. $\begin{bmatrix} 5 & 7 & 3 \\ 1 & -5 & 5 \end{bmatrix}$

6. $\begin{bmatrix} 4 & 6 & 0 \\ -5 & -2 & 1 \\ 7 & 12 & -1 \end{bmatrix}$

21. $\begin{bmatrix} 3 & -5 \\ 7 & 21 \\ -7 & 21 \end{bmatrix}$

25. $\begin{bmatrix} 17 & -69 \\ -19 & 78 \end{bmatrix}$