

Chapter 12 Review

Solve. Show some work.

1. $\begin{bmatrix} 3 & x \\ 4y & 2 \end{bmatrix} = \begin{bmatrix} 3 & 15 \\ 12 & 2 \end{bmatrix}$

Perform the indicated operation.

2. $\begin{bmatrix} 3 \\ 5 \end{bmatrix} - \begin{bmatrix} 5 \\ 10 \end{bmatrix}$

3. $\begin{bmatrix} 2 & 4 \\ -3 & 3 \end{bmatrix} + \begin{bmatrix} 1 & 0 \\ -1 & -2 \end{bmatrix}$

4. $10 \begin{bmatrix} 2 & 9 \\ 7 & -3 \end{bmatrix}$

5. $3 \begin{bmatrix} 2 & 3 \\ 1 & -1 \end{bmatrix} + 2 \begin{bmatrix} 0 & -2 \\ -1 & 3 \end{bmatrix}$

6. $\begin{bmatrix} 3 & 9 \end{bmatrix} \begin{bmatrix} 2 \\ -3 \end{bmatrix}$

7. $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} -4 & -3 \\ -2 & -1 \end{bmatrix}$

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

9. $\begin{bmatrix} 2 & -5 \\ 3 & -1 \end{bmatrix} \begin{bmatrix} -3 \\ 5 \end{bmatrix}$

10. $\begin{bmatrix} 2 & -5 \\ -4 & 1 \end{bmatrix} + \begin{bmatrix} 3 & -2 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} -3 & -1 \\ 2 & -2 \end{bmatrix}$

Evaluate the determinate of the matrix.

11. $\begin{vmatrix} 10 & -1 \\ 20 & 2 \end{vmatrix}$

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

Find the area of a triangle with the given vertices.

13. $(1, 3), (-2, 4), (5, -3)$

Use Cramer's Rule to solve the linear system.

14. $\begin{cases} 2x - 3y = 6 \\ x + y = 2 \end{cases}$

15. Find the inverse of $\begin{bmatrix} 2 & -1 \\ -3 & 4 \end{bmatrix}$.

Use an inverse matrix to solve the linear system.

16. $\begin{cases} 2x - y = 8 \\ -3x + 4y = 1 \end{cases}$

17. For a fundraiser, a student sold a total of 20 tickets for \$122. If child tickets are \$5 and adult tickets are \$7, how many of each type of ticket did the student sell?

Answers

1. $(15, 3)$
2. $\begin{bmatrix} -2 \\ -5 \end{bmatrix}$
3. $\begin{bmatrix} 3 & 4 \\ -4 & 1 \end{bmatrix}$
4. $\begin{bmatrix} 20 & 90 \\ 70 & -30 \end{bmatrix}$
5. $\begin{bmatrix} 6 & 5 \\ 1 & 3 \end{bmatrix}$
6. $[-21]$
7. $\begin{bmatrix} -8 & -5 \\ -20 & -13 \end{bmatrix}$
8. $[2 \quad -4]$
9. $\begin{bmatrix} -31 \\ -14 \end{bmatrix}$
10. $\begin{bmatrix} -11 & -4 \\ -7 & 0 \end{bmatrix}$
11. 40
12. 0
13. 7 units²
14. $\left(\frac{12}{5}, -\frac{2}{5}\right)$
15. $\begin{bmatrix} \frac{4}{5} & \frac{1}{5} \\ \frac{3}{5} & \frac{2}{5} \\ \frac{1}{5} & \frac{1}{5} \end{bmatrix}$
16. $\left(\frac{33}{5}, \frac{26}{5}\right)$
17. 9 child, 11 adult