2-3

Practice

Modeling Real-World Data with Matrices

Find the values of x and y for which each matrix equation is true.

1. $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{matrix} 2y - 4 \\ 2x \end{matrix}$

2. $\begin{bmatrix} 2x - 3 \\ 4y \end{bmatrix} = \begin{matrix} y \\ 3x \end{matrix}$

Use matrices A, B, and C to find each sum, difference, or product.

$A = \begin{bmatrix} -1 & 5 & 6 \\ 2 & -7 & -2 \\ 4 & 4 & 2 \end{bmatrix}$ $B = \begin{bmatrix} 2 & 3 & 1 \\ -1 & 1 & 4 \\ 5 & -2 & 3 \end{bmatrix}$ $C = \begin{bmatrix} 8 & 10 & -9 \\ -6 & 12 & 14 \end{bmatrix}$

3. $A + B$

4. $A - B$

5. $B - A$

6. $-2A$

7. CA

8. AB

9. AA

10. CB

11. $(CA)B$

12. $C(AB)$

13. ***Entertainment*** On one weekend, the Goxfield Theater reported the following ticket sales for three first-run movies, as shown in the matrix at the right. If the ticket prices were \$6 for each adult and \$4 for each child, what were the weekend sales for each movie.

$$\begin{array}{l} \\ \text{Movie 1} \\ \text{Movie 2} \\ \text{Movie 3} \end{array} \begin{array}{c} \begin{array}{cc} \textbf{Adults} & \textbf{Children} \end{array} \\ \begin{bmatrix} 1021 & 523 \\ 2547 & 785 \\ 3652 & 2456 \end{bmatrix} \end{array}$$