Name _____ Date _____
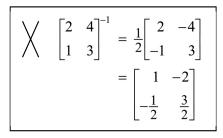
In Exercises 1–4, find the inverse of the matrix, if it exists.

1. $\begin{bmatrix} 2 & 12 \\ 0 & 1 \end{bmatrix}$
2. $\begin{bmatrix} -9 & -2 \\ 18 & 4 \end{bmatrix}$
3. $\begin{bmatrix} -3 & 11 \\ 5 & -18 \end{bmatrix}$
4. $\begin{bmatrix} 10 & -5 \\ 16 & -8 \end{bmatrix}$

5. Describe and correct the error in finding the inverse of the matrix.

$$\cancel{\times} \begin{bmatrix} 2 & 4 \\ 1 & 3 \end{bmatrix}^{-1} = \frac{1}{2}\begin{bmatrix} 2 & -4 \\ -1 & 3 \end{bmatrix}$$

$$= \begin{bmatrix} 1 & -2 \\ -\frac{1}{2} & \frac{3}{2} \end{bmatrix}$$

In Exercises 6–8, solve the matrix equation.

6. $\begin{bmatrix} -6 & -5 \\ 2 & 2 \end{bmatrix} X = \begin{bmatrix} -1 & -8 \\ 5 & -2 \end{bmatrix}$
7. $\begin{bmatrix} 8 & 5 \\ 5 & 3 \end{bmatrix} X = \begin{bmatrix} 1 & 8 \\ 4 & 0 \end{bmatrix}$
8. $\begin{bmatrix} -9 & -3 \\ 11 & 4 \end{bmatrix} X = \begin{bmatrix} -3 & 6 & 0 \\ 9 & -12 & -1 \end{bmatrix}$

In Exercises 9–11, use technology to find the inverse of *A*. Then use technology to verify your result.

9. $\begin{bmatrix} 3 & 2 & 2 \\ 3 & 0 & 1 \\ -5 & 2 & -1 \end{bmatrix}$
10. $\begin{bmatrix} -1 & 2 & 3 \\ 0 & 3 & 2 \\ 1 & 6 & 1 \end{bmatrix}$
11. $\begin{bmatrix} -3 & 4 & -6 \\ 1 & -2 & 2 \\ 1 & -5 & 1 \end{bmatrix}$

In Exercises 12–14, use an inverse matrix to solve the linear system.

12. $-3x - 2y = -9$
$-7x + y = -38$

13. $-6x + y = 44$
$-x - 3y = 20$

14. $6x - 2y = 38$
$-7x + 6y = -37$

15. At a café, an order of 3 juices, 2 smoothies, and an iced tea costs $27.80. An order of 3 juices, 4 smoothies, and 3 iced teas costs $45.70. An order of 4 juices, 5 smoothies and 2 iced teas costs $50.95. What is the cost of each kind of drink?

16. At a food truck, an order of 5 sandwiches, 4 salads, and 3 drinks costs $57.25. An order of 3 sandwiches, 6 salads, and 5 drinks costs $57.75. An order of 2 sandwiches, 3 salads, and 3 drinks costs $33.25. How much does each item cost?