Practice Test: Systems & Matrices

Solve each system.

1) $y = -\dfrac{1}{2}x + 3$

$y = \dfrac{1}{2}x - 1$

2) $x - 2y = 6$
$3x - 2y = 2$

3) $3x - 6y = 18$
$y = -5$

4) $-2x - 3y = 2$
$5x + 6y = -11$

5) $-3x - 2y = -3$
$10x + y = 27$

6) $-4x - 10y = 18$
$-3x - 4y = -4$

7) $5x + 4y + 4z = -26$
$-4x - 3y - 6z = 26$
$4x + 4y + 4z = -24$

8) $r - 5s + t = 22$
$3r - 5s + 4t = 12$
$4r - 3s - 2t = 27$

9) $3x + 2y - z + w = 0$
$x - y + 4z + 2w = 25$
$-2x + y + 2z - w = 2$
$x + y + z + w = 6$

10) $2x - y + z = 7$
$x + y - z + 3w = -4$
$x - 4y + 3z - 2w = 18$
$y + z - w = 1$

Simplify. Write "undefined" for expressions that are undefined.

11) $\begin{bmatrix} -3 & 6 & 5 \\ -5 & 5 & 6 \end{bmatrix} + \begin{bmatrix} 1 \\ -2 \\ 1 \end{bmatrix}$

12) $\begin{bmatrix} 5 & 3 \end{bmatrix} - \begin{bmatrix} 3 & 4 \end{bmatrix}$

13) $-2\begin{bmatrix} -4 & 0 \end{bmatrix}$

14) $3 \cdot \left(3\begin{bmatrix} -2 & -3 \end{bmatrix} \right)$

15) $-4\left(\begin{bmatrix} 4 \\ 0 \end{bmatrix} - \begin{bmatrix} -6 \\ 5 \end{bmatrix} \right)$

16) $\begin{bmatrix} 3 & -1 & -5 \\ 4 & -2 & 0 \end{bmatrix} - \left(4\begin{bmatrix} -2 & 3 & 3 \\ 0 & 6 & -6 \end{bmatrix} \right)$

17) $\begin{bmatrix} 6 \\ 6 \end{bmatrix} \cdot \left(\begin{bmatrix} 0 & 1 \end{bmatrix} \cdot \begin{bmatrix} 5 & -4 & 6 \\ -4 & -1 & 1 \end{bmatrix} \right)$

18) $\begin{bmatrix} -5 & 3 & 1 \\ 2 & -6 & 1 \end{bmatrix} \cdot \left(\begin{bmatrix} -5 & 5 \\ -1 & 4 \\ -1 & -1 \end{bmatrix} \cdot \begin{bmatrix} 1 & 1 \\ -4 & -3 \end{bmatrix} \right)$

Solve each equation.

19) $\begin{bmatrix} 2 & -11 \\ -3 & 2 \end{bmatrix} + 3X = \begin{bmatrix} 14 & -26 \\ -33 & 8 \end{bmatrix}$

20) $-3Y + \begin{bmatrix} 8 & -5 \\ 5 & -5 \end{bmatrix} = \begin{bmatrix} 11 & -14 \\ -19 & -5 \end{bmatrix}$

For each matrix state if an inverse exists.

21) $\begin{bmatrix} 5 & 0 \\ -4 & 0 \end{bmatrix}$

Find the inverse of each matrix. Keep the determinant factored out.

22) $\begin{bmatrix} -11 & 5 \\ 1 & 7 \end{bmatrix}$

23) $\begin{bmatrix} -8 & 4 \\ 5 & -2 \end{bmatrix}$

Find the inverse of each matrix.

24) $\begin{bmatrix} 8 & 7 \\ -8 & -2 \end{bmatrix}$

25) $\begin{bmatrix} 5 & -3 & -5 \\ 3 & -7 & -2 \\ -2 & 1 & 2 \end{bmatrix}$