Algebra 2 Matrices Review

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 1. Find $7A + 6B$.

$$A = \begin{bmatrix} 1 & -1 \\ 0 & -3 \\ 5 & 2 \end{bmatrix} \quad B = \begin{bmatrix} -2 & 1 \\ 5 & 4 \\ 0 & -7 \end{bmatrix}$$

$\begin{bmatrix} -5 & -1 \\ 30 & 3 \\ 35 & -28 \end{bmatrix}$

Evaluate the determinant of the matrix.

____ 2. $\begin{bmatrix} -5 & -5 & 4 \\ -5 & 4 & -1 \\ 0 & 3 & -1 \end{bmatrix}$ -30

____ 3. A matrix contains 48 elements. Which of the following *cannot* equal the number of rows of the matrix?

must be a factor of 48

Use Cramer's Rule to solve the system.

____ 4. $\begin{cases} 1.5x - 0.5y = -3.5 \\ 1.5x + 1.5y = -7.5 \end{cases}$

$D = \begin{bmatrix} 1.5 & -0.5 \\ 1.5 & 1.5 \end{bmatrix}$ $D_x = \begin{bmatrix} -3.5 & -0.5 \\ -7.5 & 1.5 \end{bmatrix}$ $D_y = \begin{bmatrix} 1.5 & -3.5 \\ 1.5 & -7.5 \end{bmatrix}$

$x = -3$

$y = -2$

Identify the given matrix element.

____ 5. $a_{2,3}$

$\begin{bmatrix} -1 & 2 & 5 & 0 \\ -5 & 0 & -6 & 7 \\ 9 & 9 & 2 & -1 \\ 8 & -5 & 0 & -7 \end{bmatrix}$ -6

____ 6. $a_{2,1}$

$\begin{bmatrix} -1 & 2 & 5 & 3 \\ -5 & 0 & 4 & 7 \\ 9 & 6 & -3 & -1 \\ 8 & -5 & -2 & 1 \end{bmatrix}$ -5

Solve the system.

7. $\begin{cases} -3x + 10y = 3 \\ x - 3y = -3 \end{cases}$

$\begin{bmatrix} -3 & 10 \\ 1 & -3 \end{bmatrix}\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 \\ -3 \end{bmatrix}$ $\quad \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -21 \\ -6 \end{bmatrix}$

8. $\begin{cases} 4x + 2y - z = 6 \\ 2x + 3y - 2z = 5 \\ -4x + 4y + 2z = 0 \end{cases}$

$\begin{bmatrix} x \\ y \\ z \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ 0 \end{bmatrix}$

Find the product.

9. $\begin{bmatrix} -7 & 6 \\ 1 & 6 \end{bmatrix}\begin{bmatrix} -4 & 1 \\ -4 & 3 \end{bmatrix} =$ $\begin{bmatrix} 4 & 11 \\ -28 & 19 \end{bmatrix}$

10. $\begin{bmatrix} 0 & 0 & -2 \end{bmatrix}\begin{bmatrix} -1 \\ -5 \\ -1 \end{bmatrix} = \begin{bmatrix} 2 \end{bmatrix}$

11. $-4\begin{bmatrix} 7 & -4 & 0 \\ -3 & 0 & 5 \\ 6 & 2 & 1 \end{bmatrix} = \begin{bmatrix} -28 & 16 & 0 \\ 12 & 0 & -20 \\ -24 & -8 & -4 \end{bmatrix}$

Use matrices *A*, *B*, and *C*. Find the sum or difference if you can.

$A = \begin{bmatrix} -5 & 4 \\ -8 & 2 \end{bmatrix}$ $B = \begin{bmatrix} -2 & 7 & -3 \\ 1 & -6 & 0 \end{bmatrix}$ $C = \begin{bmatrix} 5 & 3 & -1 \\ -3 & 0 & 6 \end{bmatrix}$

12. $C + A$ N/A

13. $C + B$ $\begin{bmatrix} 3 & 10 & -4 \\ -2 & -6 & 6 \end{bmatrix}$

____ 14. State the dimensions of the matrix. Identify the indicated element.

$A = \begin{bmatrix} -9 & 1 \\ -7 & 5 \\ -5 & 8 \end{bmatrix}, a_{2,1}$ 3x2 and -7

Solve the matrix equation.

____ 15. $\begin{bmatrix} 1 & 1 \\ 2 & 1 \end{bmatrix} X = \begin{bmatrix} 6 & 6 \\ 2 & 4 \end{bmatrix}$ $X = \begin{bmatrix} -4 & -2 \\ 10 & 8 \end{bmatrix}$

____ 16. $X - 4\begin{bmatrix} 2 & -8 \\ -4 & 2 \end{bmatrix} = \begin{bmatrix} 4 & -6 \\ 2 & -8 \end{bmatrix}$ $X - \begin{bmatrix} 8 & -32 \\ -16 & 8 \end{bmatrix} = \begin{bmatrix} 4 & -6 \\ 2 & -8 \end{bmatrix}$ $X = \begin{bmatrix} 12 & 26 \\ -14 & 0 \end{bmatrix}$

____ 17. $X + \begin{bmatrix} 2 & 5 & 8 \\ 2 & 3 & 0 \end{bmatrix} = \begin{bmatrix} 6 & -1 & -7 \\ -5 & 2 & 7 \end{bmatrix}$ $X = \begin{bmatrix} 4 & -6 & -15 \\ -7 & -1 & 7 \end{bmatrix}$

Find the values of the variables.

____ 18. $\begin{bmatrix} -14 & -w^2 \\ 3f & 3 \end{bmatrix} = \begin{bmatrix} 2k & -81 \\ -3 & 3 \end{bmatrix}$ $k = -7$ $w = \pm 9$ $f = -1$

____ 19. $\begin{bmatrix} -6 - t & 0 \\ 8 & -5 \end{bmatrix} = \begin{bmatrix} -5 & 0 \\ 8 & -3y - 2 \end{bmatrix}$

$-6 - t = -5$

$-1 = t$

$-5 = -3y - 2$

$-3 = -3y$

$1 = y$

Evaluate the determinant.

____ 20. $\begin{vmatrix} -10 & 10 \\ 5 & -7 \end{vmatrix}$ $70 - 50 = 20$

Find the sum or difference.

____ 21. $\begin{bmatrix} 0 & -1 & 7 \\ 0 & 6 & 2 \end{bmatrix} + \begin{bmatrix} -2 & 0 & -2 \\ -3 & 5 & -1 \end{bmatrix} = \begin{bmatrix} -2 & -1 & 5 \\ -3 & 11 & 1 \end{bmatrix}$

____ 22. $\begin{bmatrix} 7 & 2 & 0 \\ -5 & 9 & 9 \end{bmatrix} - \begin{bmatrix} -1 & 3 & 8 \\ 3 & 4 & 7 \end{bmatrix} = \begin{bmatrix} 8 & -1 & -8 \\ -8 & 5 & 2 \end{bmatrix}$

____ 23. Suppose A and B are 2×1 matrices. Which of the following are the dimensions of the matrix $A + B$?

2×1