

Riddle

Algebra 2

Test #4 Review

Give the size dimensions of the following matrices.

- 1) $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$ 1×3
- 2) $B = \begin{bmatrix} 1 & 2 & 3 & 4 & 5 \\ 6 & 7 & 8 & 9 & 0 \end{bmatrix}$ 2×5
- 3) $C = \begin{bmatrix} 1 \\ 2 \\ 3 \end{bmatrix}$ 3×1

Solve the following matrices for x and y.

- 4) $[4x \ 3y] = [12 \ -1]$
 $x = 3 \ y = -\frac{1}{3}$
- 5) $\begin{bmatrix} 2x+y \\ x-3y \end{bmatrix} = \begin{bmatrix} 5 \\ 13 \end{bmatrix}$ $x = 4$
 $y = -3$

Evaluate the following.

- 6) $3 \begin{bmatrix} 8 & -3 & 2 \\ 4 & 1 & 7 \end{bmatrix} = \begin{bmatrix} 24 & -9 & 6 \\ 12 & 3 & 21 \end{bmatrix}$
- 7) $\begin{bmatrix} -4 & 3 \\ -5 & 2 \end{bmatrix} + \begin{bmatrix} 1 & -3 \\ 3 & -8 \end{bmatrix} = \begin{bmatrix} -3 & 0 \\ -2 & 6 \end{bmatrix}$
- 8) $\begin{bmatrix} 1 & 0 & -3 \\ 4 & -5 & 2 \end{bmatrix} - 2 \begin{bmatrix} -2 & 3 & 5 \\ -3 & -1 & 2 \end{bmatrix} = \begin{bmatrix} 5 & -6 & -13 \\ 10 & -3 & -2 \end{bmatrix}$
- 9) $\begin{bmatrix} 8 & -3 \\ 6 & 1 \end{bmatrix} \cdot \begin{bmatrix} 2 & -3 \\ 1 & -5 \end{bmatrix} = \begin{bmatrix} 13 & -9 \\ 13 & -23 \end{bmatrix}$
 Row \times column
- 10) $\begin{bmatrix} 3 & 4 \\ 1 & 0 \\ 2 & -5 \end{bmatrix} \cdot \begin{bmatrix} -2 & 4 & 5 \\ 3 & 0 & -1 \\ 1 & 0 & -1 \end{bmatrix} = \text{Not possible}$
 3×2 no! 3×3

Evaluate the following determinants.

- 11) $\begin{vmatrix} 4 & 11 \\ -7 & 8 \end{vmatrix} = 109$
- 12) $\begin{vmatrix} 7 & -4 & 5 \\ 1 & 3 & -6 \\ 5 & -1 & -2 \end{vmatrix} = -52$
- 13) $\begin{vmatrix} 5 & -1 & 2 \\ -6 & -7 & 3 \\ 7 & 0 & 4 \end{vmatrix} = -87$

Find the inverse of the following matrices.

- 14) $\begin{bmatrix} 3 & 2 \\ 4 & -2 \end{bmatrix} = \frac{1}{-14} \begin{bmatrix} -2 & -2 \\ -4 & 3 \end{bmatrix}$
- 15) $\begin{bmatrix} 2 & -4 \\ -3 & 6 \end{bmatrix} = \frac{0}{0} \text{ inverse}$
- 16) $\begin{bmatrix} -6 & 2 \\ 3 & 1 \end{bmatrix} = \frac{1}{-12} \begin{bmatrix} 1 & -2 \\ -3 & -6 \end{bmatrix}$

17) Write the identity matrix for a 3×3 matrix.

$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$$

18) Solve the system of equations Using Cramer's Rule.

$$\begin{aligned} 2x - 8y &= 3 \\ 7x - 2y &= 5 \end{aligned} \quad \left(\frac{17}{26}, -\frac{11}{52} \right)$$

19) Solve the system of equations using Cramer's Rule.

$$\begin{aligned} 3x + 8 &= -y \\ 4x - 2y &= -14 \end{aligned} \quad (-3, 1)$$

20) Solve the system of equations using Cramer's Rule.

$$\begin{aligned} 3x - 5y &= -13 \\ 4x + 3y &= 2 \end{aligned} \quad (-1, 2)$$