

Matrix Quiz ... Set 2

Matrix Review

Simplify. Write "undefined" for expressions that are undefined. (Non Calculator Section)

$$1) \begin{bmatrix} 0 & 0 & -5 \\ -1 & -1 & 1 \end{bmatrix} + \begin{bmatrix} -1 & 3 & 3 \\ 3 & -1 & 0 \end{bmatrix}$$

$$2) \begin{bmatrix} -5 & 0 \end{bmatrix} - \begin{bmatrix} 2 & 0 \end{bmatrix}$$

$$3) \begin{bmatrix} 1 & -4 \\ -1 & -1 \end{bmatrix} + \begin{bmatrix} -3 & -6 \\ 2 & 6 \end{bmatrix}$$

$$4) \begin{bmatrix} 3 \\ 6 \end{bmatrix} + \begin{bmatrix} 5 \\ 2 \end{bmatrix}$$

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

$$6) \begin{bmatrix} 6 & 4 & -1 & 0 \\ 0 & -4 & -5 & 2 \end{bmatrix} \cdot \begin{bmatrix} -6 & 6 \\ -1 & 2 \\ -1 & 0 \\ -1 & 6 \end{bmatrix}$$

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

$$8) \begin{bmatrix} 5 & 3 & 1 \\ 2 & 6 & 3 \end{bmatrix} \cdot \begin{bmatrix} 0 & 0 \\ 3 & 1 \\ 6 & 3 \end{bmatrix} + \begin{bmatrix} 1 & -1 \\ -6 & 2 \end{bmatrix}$$

$$9) \begin{bmatrix} 4 & -2 \\ 0 & -3 \end{bmatrix} \cdot \begin{bmatrix} -1 & -2 \\ 5 & 5 \end{bmatrix} + \begin{bmatrix} -4 & 3 \\ -2 & 5 \end{bmatrix}$$

Matrix Quiz ... Set 2

Answers

Matrix Review

Simplify. Write "undefined" for expressions that are undefined. (Non Calculator Section)

$$1) \begin{bmatrix} 0 & 0 & -5 \\ -1 & -1 & 1 \end{bmatrix} + \begin{bmatrix} -1 & 3 & 3 \\ 3 & -1 & 0 \end{bmatrix}$$
$$\begin{bmatrix} -1 & 3 & -2 \\ 2 & -2 & 1 \end{bmatrix}$$

$$2) \begin{bmatrix} -5 & 0 \end{bmatrix} - \begin{bmatrix} 2 & 0 \end{bmatrix}$$
$$\begin{bmatrix} -7 & 0 \end{bmatrix}$$

$$3) \begin{bmatrix} 1 & -4 \\ -1 & -1 \end{bmatrix} + \begin{bmatrix} -3 & -6 \\ 2 & 6 \end{bmatrix}$$
$$\begin{bmatrix} -2 & -10 \\ 1 & 5 \end{bmatrix}$$

$$4) \begin{bmatrix} 3 \\ 6 \end{bmatrix} + \begin{bmatrix} 5 \\ 2 \end{bmatrix}$$
$$\begin{bmatrix} 8 \\ 8 \end{bmatrix}$$

$$5) \begin{bmatrix} 0 & -4 \\ 4 & -5 \end{bmatrix} \cdot \begin{bmatrix} -4 & -1 \\ -5 & 6 \end{bmatrix}$$
$$\begin{bmatrix} 20 & -24 \\ 9 & -34 \end{bmatrix}$$

$$6) \begin{bmatrix} 6 & 4 & -1 & 0 \\ 0 & -4 & -5 & 2 \end{bmatrix} \cdot \begin{bmatrix} -6 & 6 \\ -1 & 2 \\ -1 & 0 \\ -1 & 6 \end{bmatrix}$$
$$\begin{bmatrix} -39 & 44 \\ 7 & 4 \end{bmatrix}$$

$$7) \begin{bmatrix} 3 & -3 & 1 & -4 \\ 3 & 6 & -2 & 1 \end{bmatrix} \cdot \begin{bmatrix} 2 & -4 \\ 4 & 2 \\ 5 & 0 \\ 6 & 3 \end{bmatrix}$$
$$\begin{bmatrix} -25 & -30 \\ 26 & 3 \end{bmatrix}$$

$$8) \begin{bmatrix} 5 & 3 & 1 \\ 2 & 6 & 3 \end{bmatrix} \cdot \begin{bmatrix} 0 & 0 \\ 3 & 1 \\ 6 & 3 \end{bmatrix} + \begin{bmatrix} 1 & -1 \\ -6 & 2 \end{bmatrix}$$
$$\begin{bmatrix} 16 & 5 \\ 30 & 17 \end{bmatrix}$$

$$9) \begin{bmatrix} 4 & -2 \\ 0 & -3 \end{bmatrix} \cdot \begin{bmatrix} -1 & -2 \\ 5 & 5 \end{bmatrix} + \begin{bmatrix} -4 & 3 \\ -2 & 5 \end{bmatrix}$$
$$\begin{bmatrix} -18 & -15 \\ -17 & -10 \end{bmatrix}$$

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Evaluate each determinant. (10 & 11 Non Calculator)

$$10) \begin{vmatrix} 0 & -4 \\ -1 & -5 \end{vmatrix}$$

$$11) \begin{vmatrix} 2 & 1 \\ -3 & 2 \end{vmatrix}$$

$$12) \begin{vmatrix} 6 & -4 & 4 \\ -6 & -2 & -1 \\ 1 & 2 & 3 \end{vmatrix}$$

$$13) \begin{vmatrix} 5 & -5 & 5 \\ -7 & 1 & 2 \\ 7 & 0 & 3 \end{vmatrix}$$

For each matrix state if an inverse exists. (Non Calculator)

$$14) \begin{bmatrix} -6 & 0 \\ -1 & 0 \end{bmatrix}$$

$$15) \begin{bmatrix} 11 & -1 \\ -11 & 1 \end{bmatrix}$$

Find the inverse of each matrix. (16 & 17 Non Calculator)

$$16) \begin{bmatrix} 7 & 0 \\ -4 & 8 \end{bmatrix}$$

$$17) \begin{bmatrix} -5 & -8 \\ 6 & -6 \end{bmatrix}$$

$$18) \begin{bmatrix} 4 & -1 & 1 \\ -3 & -6 & -3 \\ 2 & 6 & 3 \end{bmatrix}$$

$$19) \begin{bmatrix} 2 & 6 & -2 \\ -3 & -4 & 0 \\ 5 & -2 & 6 \end{bmatrix}$$

Use the Multiplication by the Inverse Method to solve each system.

$$20) \begin{cases} -2x + 2y = -12 \\ -6x + 3y = -24 \end{cases}$$

$$21) \begin{cases} -6x - y = -11 \\ 4x - y = 9 \end{cases}$$

Matrix Quiz ... Set 2

Answers

Evaluate each determinant. (10 & 11 Non Calculator)

$$10) \begin{vmatrix} 0 & -4 \\ -1 & -5 \end{vmatrix}$$

-4

$$11) \begin{vmatrix} 2 & 1 \\ -3 & 2 \end{vmatrix}$$

7

$$12) \begin{vmatrix} 6 & -4 & 4 \\ -6 & -2 & -1 \\ 1 & 2 & 3 \end{vmatrix}$$

-132

$$13) \begin{vmatrix} 5 & -5 & 5 \\ -7 & 1 & 2 \\ 7 & 0 & 3 \end{vmatrix}$$

-195

For each matrix state if an inverse exists. (Non Calculator)

$$14) \begin{bmatrix} -6 & 0 \\ -1 & 0 \end{bmatrix}$$

No

$$15) \begin{bmatrix} 11 & -1 \\ -11 & 1 \end{bmatrix}$$

No

Find the inverse of each matrix. (16 & 17 Non Calculator)

$$16) \begin{bmatrix} 7 & 0 \\ -4 & 8 \end{bmatrix}$$
$$\begin{bmatrix} \frac{1}{7} & 0 \\ \frac{1}{14} & \frac{1}{8} \end{bmatrix}$$

$$17) \begin{bmatrix} -5 & -8 \\ 6 & -6 \end{bmatrix}$$
$$\begin{bmatrix} -\frac{1}{13} & \frac{4}{39} \\ \frac{1}{13} & -\frac{5}{78} \end{bmatrix}$$

$$18) \begin{bmatrix} 4 & -1 & 1 \\ -3 & -6 & -3 \\ 2 & 6 & 3 \end{bmatrix}$$
$$\begin{bmatrix} 0 & -1 & -1 \\ -\frac{1}{3} & -\frac{10}{9} & -1 \\ \frac{2}{3} & \frac{26}{9} & 3 \end{bmatrix}$$

$$19) \begin{bmatrix} 2 & 6 & -2 \\ -3 & -4 & 0 \\ 5 & -2 & 6 \end{bmatrix}$$
$$\begin{bmatrix} -\frac{3}{4} & -\frac{4}{4} & -\frac{1}{4} \\ \frac{9}{4} & \frac{11}{4} & \frac{3}{4} \\ \frac{13}{4} & \frac{17}{4} & \frac{5}{4} \end{bmatrix}$$

Use the Multiplication by the Inverse Method to solve each system.

$$20) \begin{cases} -2x + 2y = -12 \\ -6x + 3y = -24 \end{cases}$$

(2, -4)

$$21) \begin{cases} -6x - y = -11 \\ 4x - y = 9 \end{cases}$$

(2, -1)

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$$\begin{aligned} 22) \quad & 6x + 4y + 4z = 4 \\ & -2x + z = 1 \\ & -x + 2y - z = -9 \end{aligned}$$

$$\begin{aligned} 23) \quad & -6x + 6y - z = -3 \\ & -6x + 6y + z = -9 \\ & 3x - 3y = -12 \end{aligned}$$

Solve each equation or state if there is no unique solution. (Non Calculator Section)

$$24) \quad 2C = \begin{bmatrix} 8 \\ -8 \\ -20 \\ -20 \end{bmatrix}$$

$$25) \quad \begin{bmatrix} -30 \\ 30 \\ 30 \end{bmatrix} = 5Z$$

$$26) \quad 2X = \begin{bmatrix} 0 \\ -12 \\ -10 \\ 20 \end{bmatrix}$$

Find the Area of the Triangle given the Triangles' Vertices.

$$27) \quad (2,3), (3,0), \& (-1,-1)$$

Decode the following message.

$$28) \quad 18 \ 19 \ 38 \ 21 \ 50 \ 25 \text{ using the inverse of}$$
$$\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}$$

Matrix Quiz ... Set 2

Answers

$$\begin{aligned} 22) \quad & 6x + 4y + 4z = 4 \\ & -2x + z = 1 \\ & -x + 2y - z = -9 \\ & \left(\frac{4}{5}, -\frac{14}{5}, \frac{13}{5} \right) \end{aligned}$$

$$\begin{aligned} 23) \quad & -6x + 6y - z = -3 \\ & -6x + 6y + z = -9 \\ & 3x - 3y = -12 \\ & \text{No unique solution} \end{aligned}$$

Solve each equation or state if there is no unique solution. (Non Calculator Section)

$$24) \quad 2C = \begin{bmatrix} 8 \\ -8 \\ -20 \\ -20 \end{bmatrix}$$
$$\begin{bmatrix} 4 \\ -4 \\ -10 \\ -10 \end{bmatrix}$$

$$25) \quad \begin{bmatrix} -30 \\ 30 \\ 30 \end{bmatrix} = 5Z$$
$$\begin{bmatrix} -6 \\ 6 \\ 6 \end{bmatrix}$$

$$26) \quad 2X = \begin{bmatrix} 0 \\ -12 \\ -10 \\ 20 \end{bmatrix}$$
$$\begin{bmatrix} 0 \\ -6 \\ -5 \\ 10 \end{bmatrix}$$

Find the Area of the Triangle given the Triangles' Vertices.

$$27) \quad (2,3), (3,0), \&(-1,-1)$$

Decode the following message.

$$28) \quad 18 \ 19 \ 38 \ 21 \ 50 \ 25 \ \text{using the inverse of}$$
$$\begin{bmatrix} 2 & 1 \\ -1 & 0 \end{bmatrix}$$