

Matrices

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

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

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

Evaluate each determinant.

$$3) \begin{vmatrix} 0 & 8 \\ 5 & -6 \end{vmatrix}$$

$$4) \begin{vmatrix} 0 & -2 & 3 \\ -3 & -1 & -3 \\ 0 & 0 & 1 \end{vmatrix}$$

$$5) \begin{vmatrix} 4 & 0 & 2 \\ 4 & 0 & -1 \\ -1 & -3 & -2 \end{vmatrix}$$

$$6) \begin{vmatrix} -7 & -4 \\ -5 & 1 \end{vmatrix}$$

Solve each equation.

$$7) \begin{bmatrix} 0 & 3 \end{bmatrix} = Y + \begin{bmatrix} -8 & 3 \end{bmatrix}$$

Solve each equation or state if there is no unique solution.

$$8) \begin{bmatrix} -1 & -3 \\ 0 & 6 \end{bmatrix} X = \begin{bmatrix} -20 & -17 \\ 30 & 24 \end{bmatrix}$$

Solve each equation.

$$9) \begin{bmatrix} 11 & -21 \end{bmatrix} = 4X + \begin{bmatrix} -5 & 11 \end{bmatrix}$$

Solve each equation or state if there is no unique solution.

$$10) \begin{bmatrix} 6 & 8 \\ 4 & 6 \end{bmatrix} X + \begin{bmatrix} 0 \\ 3 \end{bmatrix} = \begin{bmatrix} 14 \\ 19 \end{bmatrix}$$

Find the inverse of each matrix.

$$11) \begin{bmatrix} -8 & -6 \\ -2 & -3 \end{bmatrix}$$

$$12) \begin{bmatrix} 7 & -8 \\ -2 & 8 \end{bmatrix}$$

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

$$13) -5 \begin{bmatrix} 2 \\ -2 \\ 0 \\ -1 \end{bmatrix}$$

$$14) \begin{bmatrix} 3 & 5 \\ -5 & 2 \\ -3 & 0 \\ -1 & 3 \end{bmatrix} \cdot \begin{bmatrix} -2 & -4 \\ 1 & 0 \end{bmatrix}$$

$$15) 4 \begin{bmatrix} -1 & -1 & -2 & 5 \end{bmatrix}$$

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

$$17) \begin{bmatrix} 5 \\ 6 \\ 6 \end{bmatrix} + \begin{bmatrix} -6 \\ 0 \\ 1 \end{bmatrix} - \begin{bmatrix} -5 \\ 0 \\ -2 \end{bmatrix}$$

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

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

Graph the image of the figure using the transformation given.

20) rotation 270° counterclockwise about the origin

