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Determinants and Inverses of 2 x 2 Matrices - Guided Lesson Explanation

Explanation#1

$$\begin{bmatrix} 8 & 3 \\ 4 & 2 \end{bmatrix}$$

An inverse matrix multiplied by the original matrix yields the identity matrix.

You can express the inverse of a 2 x 2 matrix as:

$$A^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

$$A^{-1} = \frac{1}{4} \begin{bmatrix} \frac{2}{-4} & \frac{-3}{8} \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} \frac{1/2}{-1} & \frac{-3/4}{2/1} \end{bmatrix}$$

Explanation #2

$$\begin{bmatrix} 9 & 4 \\ 4 & 5 \end{bmatrix}$$

You can express the determinant of a 2 x 2 matrix as:

$|A| = ad - bc$

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$$A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

Now we will calculate by using this method.

l A l = 9(5) – 4(4)

l A l = 45 – 16

l A l = 29

So, the answer is 29.

Explanation#3

$$\begin{bmatrix} 3 & 2 \\ -5 & 6 \end{bmatrix}$$

An Inverse Matrices when multiplied by the original matrices yields the identity matrices.

You can express the inverse of a 2 x 2 matrix as:

$$A^{-1} = \frac{1}{ad-bc} \begin{bmatrix} d & -b \\ -c & a \end{bmatrix}$$

$$A^{-1} = \frac{1}{28} \begin{bmatrix} 6 & -2 \\ -5 & 3 \end{bmatrix}$$

$$A^{-1} = \begin{bmatrix} 3/14 & -1/14 \\ 5/28 & 3/28 \end{bmatrix}$$