Matrices M7: Identity and Inverse Matrices

Find the inverse of the matrix (if it exists).

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

5. For the matrices $A = \begin{bmatrix} 1 & 0 \\ -6 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & 0 \\ 3 & \frac{1}{2} \end{bmatrix}$, PROVE that they are inverses of each other.

6. Find the inverse of the matrix, if it exists. $A = \begin{bmatrix} -2 & 5 \\ 0 & 3 \end{bmatrix}$.

a. $\begin{bmatrix} -\frac{1}{2} & 0 \\ 5 & \frac{1}{3} \end{bmatrix}$ b. Does Not Exist c. $\begin{bmatrix} 2 & 0 \\ 5 & -3 \end{bmatrix}$ d. $\begin{bmatrix} -\frac{1}{2} & \frac{5}{6} \\ 0 & \frac{1}{3} \end{bmatrix}$

Solve Using Cramer's Rule:

7. $2x + y = 5$
$3x - 2y = -3$

8. $3x + 5y = -3$
$2x + 4y = -2$

9. $2y = 7x - 4$
$-5x + 3y = 5$

Find the value of the determinant: $\begin{bmatrix} 2 & 1 & -3 \\ 0 & 1 & 4 \\ -1 & 3 & 2 \end{bmatrix}$