Name_____

Inverse Matrices

Date_____ Period_____

For each matrix state if an inverse exists.

1) $\begin{bmatrix} -9 & -9 \\ -2 & -2 \end{bmatrix}$

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

3) $\begin{bmatrix} 4 & -5 \\ -9 & 6 \end{bmatrix}$

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

Find the inverse of each matrix.

5) $\begin{bmatrix} 11 & -5 \\ 2 & -1 \end{bmatrix}$

6) $\begin{bmatrix} 0 & -2 \\ -1 & -9 \end{bmatrix}$

7) $\begin{bmatrix} -1 & 7 \\ -1 & 7 \end{bmatrix}$

8) $\begin{bmatrix} 1 & -1 \\ -6 & -3 \end{bmatrix}$

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

10) $\begin{bmatrix} -6 & 11 \\ -4 & 7 \end{bmatrix}$

11) $\begin{bmatrix} -9 & -6 \\ -5 & -4 \end{bmatrix}$

12) $\begin{bmatrix} 5 & -8 \\ 6 & -9 \end{bmatrix}$

13) $\begin{bmatrix} 2 & -10 \\ -11 & 8 \end{bmatrix}$

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

15) $\begin{bmatrix} -2 & 2 \\ -9 & 8 \end{bmatrix}$

16) $\begin{bmatrix} -3 & 3 \\ 8 & 7 \end{bmatrix}$

Critical thinking questions:

17) Give an example of a 2×2 matrix with no inverse.

18) Give an example of a matrix which is its own inverse (that is, where $A^{-1} = A$)

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Inverse Matrices

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For each matrix state if an inverse exists.

1) $\begin{bmatrix} -9 & -9 \\ -2 & -2 \end{bmatrix}$

No

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

Yes

3) $\begin{bmatrix} 4 & -5 \\ -9 & 6 \end{bmatrix}$

Yes

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

No

Find the inverse of each matrix.

5) $\begin{bmatrix} 11 & -5 \\ 2 & -1 \end{bmatrix}$

$\begin{bmatrix} 1 & -5 \\ 2 & -11 \end{bmatrix}$

6) $\begin{bmatrix} 0 & -2 \\ -1 & -9 \end{bmatrix}$

$\begin{bmatrix} \dfrac{9}{2} & -1 \\ -\dfrac{1}{2} & 0 \end{bmatrix}$

7) $\begin{bmatrix} -1 & 7 \\ -1 & 7 \end{bmatrix}$

No inverse exists

8) $\begin{bmatrix} 1 & -1 \\ -6 & -3 \end{bmatrix}$

$\begin{bmatrix} \dfrac{1}{3} & -\dfrac{1}{9} \\ -\dfrac{2}{3} & -\dfrac{1}{9} \end{bmatrix}$

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

$\begin{bmatrix} \dfrac{3}{5} & \dfrac{1}{5} \\ \dfrac{2}{5} & \dfrac{3}{10} \end{bmatrix}$

10) $\begin{bmatrix} -6 & 11 \\ -4 & 7 \end{bmatrix}$

$\begin{bmatrix} \dfrac{7}{2} & -\dfrac{11}{2} \\ 2 & -3 \end{bmatrix}$

11) $\begin{bmatrix} -9 & -6 \\ -5 & -4 \end{bmatrix}$

$\begin{bmatrix} -\dfrac{2}{3} & 1 \\ \dfrac{5}{6} & -\dfrac{3}{2} \end{bmatrix}$

12) $\begin{bmatrix} 5 & -8 \\ 6 & -9 \end{bmatrix}$

$\begin{bmatrix} -3 & \dfrac{8}{3} \\ -2 & \dfrac{5}{3} \end{bmatrix}$

13) $\begin{bmatrix} 2 & -10 \\ -11 & 8 \end{bmatrix}$

$\begin{bmatrix} -\dfrac{4}{47} & -\dfrac{5}{47} \\ -\dfrac{11}{94} & -\dfrac{1}{47} \end{bmatrix}$

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

$\begin{bmatrix} -2 & -\dfrac{1}{2} \\ \dfrac{3}{2} & \dfrac{1}{2} \end{bmatrix}$

15) $\begin{bmatrix} -2 & 2 \\ -9 & 8 \end{bmatrix}$

$\begin{bmatrix} 4 & -1 \\ \dfrac{9}{2} & -1 \end{bmatrix}$

16) $\begin{bmatrix} -3 & 3 \\ 8 & 7 \end{bmatrix}$

$\begin{bmatrix} -\dfrac{7}{45} & \dfrac{1}{15} \\ \dfrac{8}{45} & \dfrac{1}{15} \end{bmatrix}$

Critical thinking questions:

17) Give an example of a 2×2 matrix with no inverse.

Many answers. Ex: $\begin{bmatrix} 1 & 2 \\ 2 & 4 \end{bmatrix}$

18) Give an example of a matrix which is its own inverse (that is, where $A^{-1} = A$)

Many answers. Ex: $\begin{bmatrix} -10 & 9 \\ -11 & 10 \end{bmatrix}$