4.11 The Inverse and Determinant of a Matrix

AP Precalculus Name: _____ **CA #1**

Directions: Find the determinant of each matrix. Tell whether or not the matrix will have an inverse.

1) $\begin{bmatrix} 6 & 6 \\ -7 & 9 \end{bmatrix}$

2) $\begin{bmatrix} -\frac{1}{2} & -12 \\ \frac{5}{6} & 20 \end{bmatrix}$

Directions: Find the inverse of each matrix if possible.

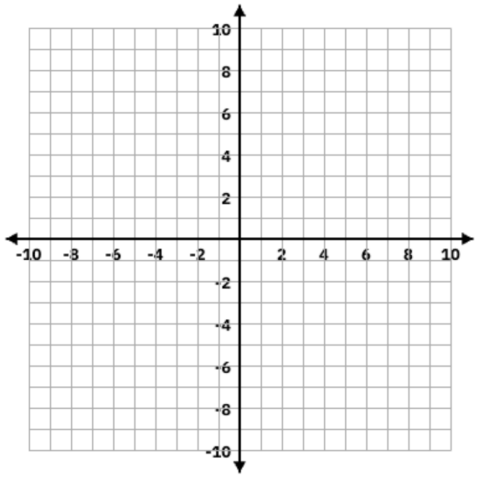
4) $\begin{bmatrix} 2 & 5 \\ -1 & 3 \end{bmatrix}$

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

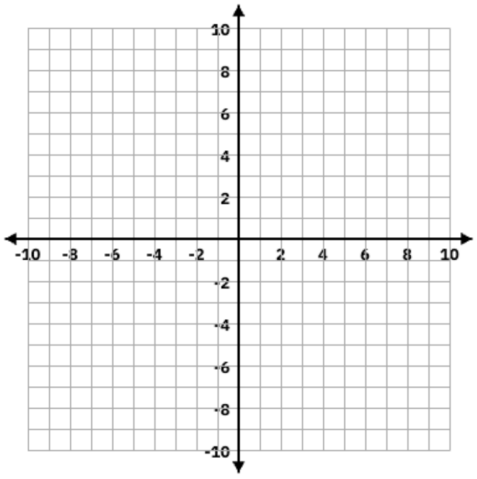
6) $\begin{bmatrix} -7 & 2 \\ 9 & -3 \end{bmatrix}$

Directions: Plot the parallelogram formed by the vectors and then find the area.

10) $\langle -7,-4\rangle$ and $\langle 6,-3\rangle$



11) $\langle 8,5\rangle$ *and* $\langle -4,3\rangle$



ANSWERS

Directions: Find the determinant of each matrix. Tell whether or not the matrix will have an inverse.

1) $\begin{bmatrix} 6 & 6 \\ -7 & 9 \end{bmatrix}$

$54 + +42 = 96$

2) $\begin{bmatrix} -\frac{1}{2} & -12 \\ \frac{5}{6} & 20 \end{bmatrix}$ $-10 + +10$

0

Directions: Find the inverse of each matrix if possible.

4) $\begin{bmatrix} 2 & 5 \\ -1 & 3 \end{bmatrix} = 6 - -5 = 11$

$\frac{1}{11}\begin{bmatrix} 3 & -5 \\ 1 & 2 \end{bmatrix} = \begin{bmatrix} \frac{3}{11} & \frac{-5}{11} \\ \frac{1}{11} & \frac{2}{11} \end{bmatrix}$

5) $\begin{bmatrix} -7 & -6 \\ 5 & 4 \end{bmatrix}$ $-28 - -30 = 2$

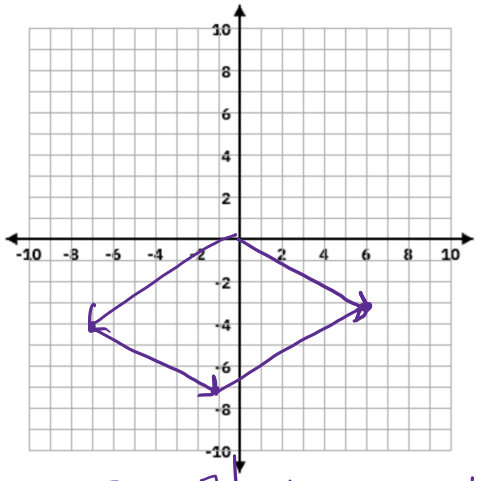
$\frac{1}{2}\begin{bmatrix} 4 & 6 \\ -5 & -7 \end{bmatrix} = \begin{bmatrix} 2 & 3 \\ \frac{-5}{2} & \frac{-7}{2} \end{bmatrix}$

6) $\begin{bmatrix} -7 & 2 \\ 9 & -3 \end{bmatrix} = 21 - 18 = 3$

$\frac{1}{3}\begin{bmatrix} -3 & 9 \\ 2 & -7 \end{bmatrix} = \begin{bmatrix} -1 & 3 \\ \frac{2}{3} & \frac{-7}{3} \end{bmatrix}$

Directions: Plot the parallelogram formed by the vectors and then find the area.

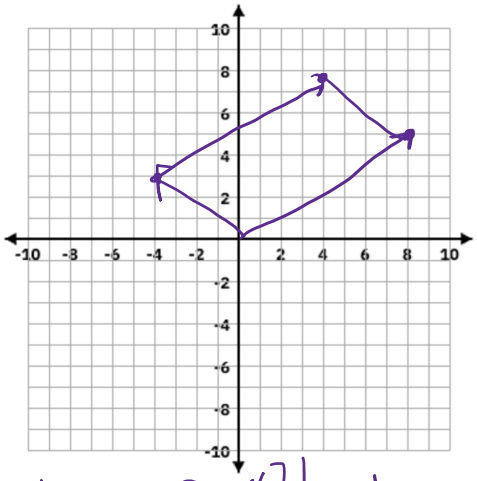
10) $\langle -7,-4\rangle$ and $\langle 6,-3\rangle$



$\left|\det\begin{bmatrix} -7 & 6 \\ -4 & -3 \end{bmatrix}\right| = |21 + +24|$

$= 45 \text{ u}^2$

11) $\langle 8,5\rangle$ *and* $\langle -4,3\rangle$



$\left|\det\begin{bmatrix} 8 & -4 \\ 5 & 3 \end{bmatrix}\right| = |-24 - 20|$

$= |-44|$

$= 44 \text{ u}^2$