

Determinant of a Matrix

Name: _____

Find the determinant of each matrix by hand.

$$1) \begin{vmatrix} 5 & -3 \\ 4 & -6 \end{vmatrix}$$

$$2) \begin{vmatrix} 3 & 9 \\ -4 & 7 \end{vmatrix}$$

$$3) \begin{vmatrix} 16 & -10 \\ -8 & 5 \end{vmatrix}$$

$$4) \begin{vmatrix} -7 & 8 \\ 3 & 4 \end{vmatrix}$$

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

6) Is $\det(A) \times \det(B) = \det(AB)$?

$$A = \begin{bmatrix} 3 & -1 \\ 5 & 6 \end{bmatrix} \quad B = \begin{bmatrix} -4 & 1 \\ 3 & -2 \end{bmatrix}$$

Solve for the missing variable.

$$7) \det(A) = -3, A = \begin{bmatrix} -0.5 & 2 \\ x & 10 \end{bmatrix}$$

$$8) \det(C) = 12, C = \begin{bmatrix} x & -2 \\ 2x & x \end{bmatrix}$$

9) A surveying crew located three points on a map that formed the vertices of a triangular area. A coordinate grid in which one unit equals 10 miles is placed over the map so that the vertices are located at $(0,-1)$, $(-2,-6)$, and $(3,-2)$. Use a determinant to find the area of the triangle.

10) The “Bermuda Triangle” is an area located off the southeastern Atlantic coast of the United States, and noted for reports of unexplained losses of ships, small boats, and aircraft.

a. Find the area of the triangle on the map.

b. Suppose each grid represents 175 miles. What is the area of the Bermuda Triangle?

