Determinants of Square Matrices

Name _____

Date _____ Period _____

Every square matrix can be assigned a specific value known as its determinant.

$$2 \times 2$$

$$\det\begin{bmatrix} a & b \\ c & d \end{bmatrix} = ad - cb$$

The determinant of a 2x2 matrix is the difference of the products of the diagonals.

Calculate the determinants of the following 2x2 matrices.

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

$$\det\begin{bmatrix} -2 & -1 \\ 0 & 4 \end{bmatrix}$$

$$\det\begin{bmatrix} 2 & 1 \\ 1 & 2 \end{bmatrix}$$

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

Every square matrix can be assigned a specific value known as its determinant.

$$\det_{3 \times 3}\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix} = (aei + bfg + cdh) - (ceg + bdi + afh)$$

To find the determinant of a 3x3 matrix, find the sum of the product of the red diagonals, then subtract the sum of the products of the blue diagonals.

Every square matrix can be assigned a specific value known as its determinant.

$$\det\begin{bmatrix} 1 & -1 & 2 \\ 0 & -3 & 2 \\ -2 & 5 & 4 \end{bmatrix}$$

To find the determinant of a 3x3 matrix, find the sum of the product of the red diagonals, then subtract the sum of the products of the blue diagonals.

Every square matrix can be assigned a specific value known as its determinant.

$$\det\begin{bmatrix} a & b & c \\ d & e & f \\ g & h & i \end{bmatrix} = a\begin{vmatrix} e & f \\ h & i \end{vmatrix} - b\begin{vmatrix} d & f \\ g & i \end{vmatrix} + c\begin{vmatrix} d & e \\ g & h \end{vmatrix}$$

To find the determinant of a 3x3 matrix, create determinants of 2x2 matrices.

Calculate the determinant for the following 3x3 matrix.

$$\det\begin{bmatrix} 1 & -2 & 3 \\ 0 & 1 & -2 \\ 5 & 0 & 3 \end{bmatrix}$$