Determinants of 3×3 Matrices

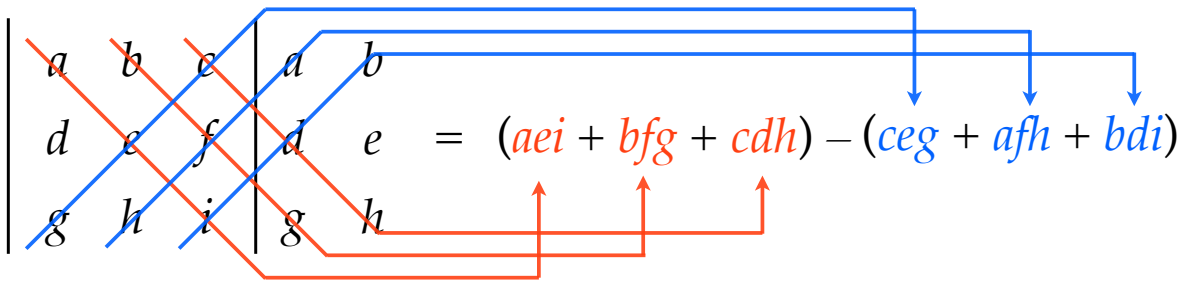
Name _____

Date _____ Period _____

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

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

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



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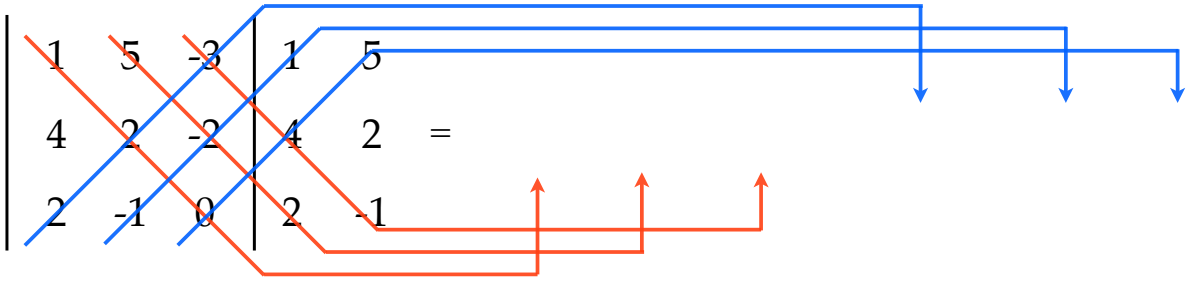

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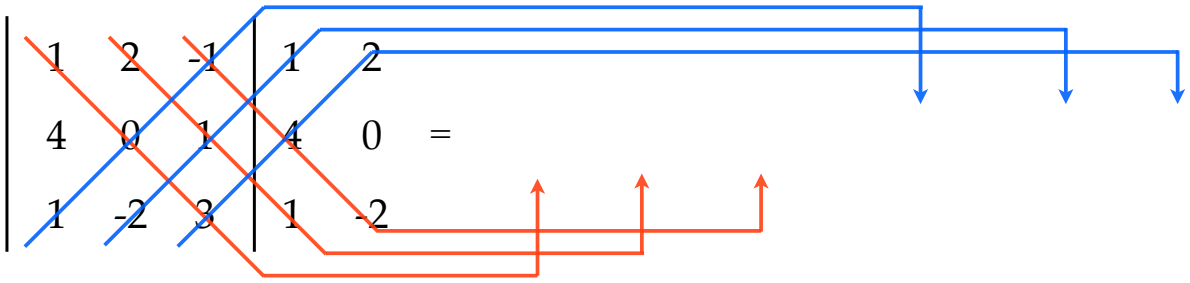

Method 2 of finding the determinant of a 3×3 matrix

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

Method 2 of finding the determinant of a 3×3 matrix

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

Method 2 of finding the determinant of a 3×3 matrix

$$\begin{vmatrix} 1 & 2 & -1 \\ 4 & 0 & 1 \\ 1 & -2 & 3 \end{vmatrix}$$