Name



# Calculate the determinant of a 3 by 3 matrix using cofactor expansion

**1** Using cofactor expansion along the first row, which shows the fully expanded determinant calculation?

$$\begin{bmatrix} 6 & 3 & 1 \\ 0 & 2 & 2 \\ -7 & 9 & 9 \end{bmatrix}$$

A $6 \cdot (2 \cdot 9 - 2 \cdot 9) - 3 \cdot (0 \cdot 9 - 2 \cdot -7) + -2 \cdot (0 \cdot 9 - 2 \cdot -7)$

B $6 \cdot (2 \cdot 9 - 9 \cdot 2) - 0 \cdot (3 \cdot 9 - 9 \cdot 1) + -7 \cdot (3 \cdot 2 - 2 \cdot 1)$

C $6 \cdot (2 \cdot 9 - 2 \cdot 9) - 3 \cdot (0 \cdot 9 - 2 \cdot -7) + 1 \cdot (0 \cdot 9 - 2 \cdot -7)$

**2** For the cofactor expansion along the first row, what is the value of the second term?

| | | |
|---|---|---|
| A -3 | B 6 | C -1 |
| D 0 | E -2 | F -6 |

**3** For the cofactor expansion along the first row, which shows the first term?

$$\begin{bmatrix} 8 & 8 & -4 \\ 7 & 9 & -6 \\ 9 & 6 & 5 \end{bmatrix}$$

A $-4 \cdot (-39)$

B $8 \cdot (81)$

**4** Which grid shows the cofactor signs for a matrix of this size?

$$\begin{bmatrix} 8 & 0 & -8 \\ -5 & 1 & 0 \\ -3 & -7 & 4 \end{bmatrix}$$

A $\begin{bmatrix} - & + & - \\ + & - & + \\ - & + & - \end{bmatrix}$

B $\begin{bmatrix} + & - & + \\ - & + & - \\ + & - & + \end{bmatrix}$

**5** Which shows how to calculate the determinant of this matrix?

$$\begin{bmatrix} -1 & 3 \\ 6 & 0 \end{bmatrix}$$

A $(-1 \cdot 6) - (3 \cdot 0)$

B $(-1 \cdot 0) - (3 \cdot 6)$

C $(-1 \cdot 3) - (6 \cdot 0)$

**6** What is the determinant of this matrix?

$$\begin{bmatrix} 6 & 0 \\ -7 & 4 \end{bmatrix}$$

| | | |
|---|---|---|
| A 30 | B 24 | C 21 |
| D 28 | E 26 | F 19 |

**7** What is the determinant of this matrix?

$$\begin{bmatrix} -5 & 2 & 0 \\ 7 & -6 & -9 \\ -5 & -6 & -7 \end{bmatrix}$$

| | | |
|---|---|---|
| A 246 | B 251 | C 249 |
| D 248 | E 247 | F 243 |