



Determine the adjugate of a matrix

- 1** Which shows row 3 of the adjoint of this matrix of minors? Fill only that row and leave the other entries blank. Apply the sign pattern $(-1)^{i+j}$ to the matrix of minors to get the cofactor matrix, then transpose it: $\text{adj}(A) = C^T$.

A	$\begin{bmatrix} \square & \square & \square \\ \square & \square & \square \\ -2 & -6 & 2 \end{bmatrix}$	B	$\begin{bmatrix} \square & \square & \square \\ \square & \square & \square \\ -2 & -4 & 2 \end{bmatrix}$
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C	$\begin{bmatrix} \square & \square & \square \\ \square & \square & \square \\ 1 & -4 & -1 \end{bmatrix}$	D	$\begin{bmatrix} \square & \square & \square \\ \square & \square & \square \\ -2 & -6 & 3 \end{bmatrix}$
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- 4** Which shows row 1 of the adjoint of this cofactor matrix? Fill only that row and leave the other entries blank. The adjoint is the transpose of the cofactor matrix: $\text{adj}(A) = C^T$.

A	$\begin{bmatrix} -4 & 4 \\ \square & \square \end{bmatrix}$	B	$\begin{bmatrix} -5 & 2 \\ \square & \square \end{bmatrix}$
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C	$\begin{bmatrix} -7 & 3 \\ \square & \square \end{bmatrix}$	D	$\begin{bmatrix} -3 & 6 \\ \square & \square \end{bmatrix}$
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- 2** What is the entry at row 3, column 1 of the adjoint of this cofactor matrix? The adjoint is the transpose of the cofactor matrix: $\text{adj}(A) = C^T$.

A	-9	B	-1	C	-5
D	-3	E	-8	F	-6

- 3** Which is the adjoint of this matrix of minors? Apply the sign pattern $(-1)^{i+j}$ to the matrix of minors to get the cofactor matrix, then transpose it: $\text{adj}(A) = C^T$.

$$\begin{bmatrix} -2 & -9 \\ -7 & -4 \end{bmatrix}$$

A	$\begin{bmatrix} -4 & 7 \\ 9 & -4 \end{bmatrix}$	B	$\begin{bmatrix} -2 & 7 \\ 10 & -5 \end{bmatrix}$
C	$\begin{bmatrix} -2 & 6 \\ 9 & -4 \end{bmatrix}$	D	$\begin{bmatrix} -2 & 7 \\ 9 & -4 \end{bmatrix}$



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- 5** Which shows column 1 of the adjoint of this cofactor matrix? Fill only that column and leave the other entries blank. The adjoint is the transpose of the cofactor matrix: $\text{adj}(A) = C^T$.

A

$$\begin{bmatrix} -4 & \square & \square \\ -1 & \square & \square \\ 7 & \square & \square \end{bmatrix}$$

B

$$\begin{bmatrix} -2 & \square & \square \\ 2 & \square & \square \\ 7 & \square & \square \end{bmatrix}$$

C

$$\begin{bmatrix} -5 & \square & \square \\ 2 & \square & \square \\ 7 & \square & \square \end{bmatrix}$$

- 6** Which is the cofactor matrix of this matrix?

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

A

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

B

$$\begin{bmatrix} -9 & 9 \\ 2 & -8 \end{bmatrix}$$

C

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

- 7** Which is the adjoint of this matrix of minors? Apply the sign pattern $(-1)^{i+j}$ to the matrix of minors to get the cofactor matrix, then transpose it: $\text{adj}(A) = C^T$.

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

A

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

B

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

C

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

D

$$\begin{bmatrix} 10 & 7 & -7 \\ -6 & 0 & -6 \\ 9 & -7 & 6 \end{bmatrix}$$

**Determine the adjugate of a matrix**

- 8 Which is the cofactor matrix of this matrix of minors? Apply the sign pattern $(-1)^{i+j}$ to each entry of the matrix of minors.

$$\begin{bmatrix} 0 & -9 & -7 \\ 7 & -3 & 5 \\ -2 & -2 & 2 \end{bmatrix}$$

A

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

B

$$\begin{bmatrix} 0 & 9 & -7 \\ -7 & -3 & -5 \\ -2 & 2 & 2 \end{bmatrix}$$

C

$$\begin{bmatrix} 0 & 9 & -7 \\ -7 & -3 & -5 \\ -2 & 5 & 2 \end{bmatrix}$$

D

$$\begin{bmatrix} 0 & 9 & -7 \\ -10 & -3 & -5 \\ -2 & 2 & 3 \end{bmatrix}$$

- 9 Which is the cofactor matrix of this matrix of minors? Apply the sign pattern $(-1)^{i+j}$ to each entry of the matrix of minors.

$$\begin{bmatrix} -1 & 4 \\ -7 & -2 \end{bmatrix}$$

A

$$\begin{bmatrix} -1 & -4 \\ 7 & -2 \end{bmatrix}$$

B

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

C

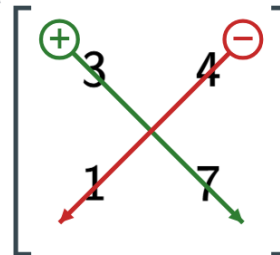
$$\begin{bmatrix} -1 & -4 \\ 7 & -1 \end{bmatrix}$$

D

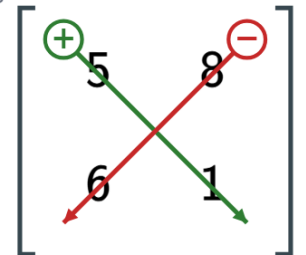
$$\begin{bmatrix} -1 & -4 \\ 9 & -2 \end{bmatrix}$$

- 10 Which diagram correctly finds the determinant of the minor matrix for the entry at row 2, column 3? Green is added, red is subtracted.

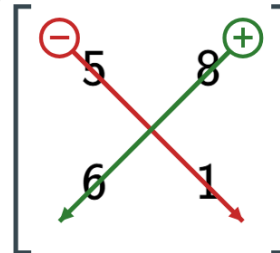
A



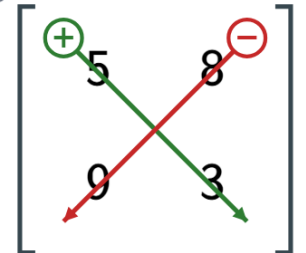
B



C



D



**Determine the adjugate of a matrix**

- 11** The determinant is 246 and the adjoint is shown. Which is the inverse matrix?

$$\begin{bmatrix} 75 & -78 & -5 \\ -12 & 42 & 18 \\ 64 & -60 & -14 \end{bmatrix}$$

A

$$\begin{bmatrix} 0.3 & -0.32 & -0.21 \\ -0.05 & 0.17 & 0.07 \\ 0.26 & -0.24 & -0.06 \end{bmatrix}$$

B

$$\begin{bmatrix} 0.3 & -0.32 & -0.21 \\ -0.05 & -2.83 & 0.07 \\ 0.26 & -3.24 & -0.06 \end{bmatrix}$$

C

$$\begin{bmatrix} 0.3 & -0.32 & -0.21 \\ -0.05 & 0.17 & 3.07 \\ 0.26 & -0.24 & -0.06 \end{bmatrix}$$

D

$$\begin{bmatrix} 0.3 & 0.68 & -0.21 \\ -0.05 & 0.17 & 0.07 \\ 0.26 & -0.24 & -0.06 \end{bmatrix}$$

- 12** Which is the inverse of this matrix? Use $A^{-1} = \frac{1}{\det A} \text{adj}(A)$.

$$\begin{bmatrix} -9 & 1 & 0 \\ -4 & -4 & 6 \\ -1 & -1 & 1 \end{bmatrix}$$

A

$$\begin{bmatrix} -3.1 & 0.05 & -0.3 \\ 0.1 & 0.45 & -2.7 \\ 0 & 0.5 & -2 \end{bmatrix}$$

B

$$\begin{bmatrix} -0.1 & 0.05 & -0.3 \\ 0.1 & 0.45 & -2.7 \\ 0 & 0.5 & -2 \end{bmatrix}$$