1. Use cofactor expansion to find the determinant of the matrix

\[ A = \begin{pmatrix} 4 & -2 & 3 \\ 1 & -2 & 2 \\ 0 & 1 & 5 \end{pmatrix} \]

(Don’t use the formula you may have learned in Calculus or another class - use cofactor expansion!)

2. Find the determinant of \( A = \begin{pmatrix} 2 & -1 \\ 1 & 3 \end{pmatrix} \)

\[ \det(A) = \]

Predict the determinant of the following matrices by noting how they are related to \( A \), and then check by computing the determinants.

\[ B = \begin{pmatrix} 4 & -2 \\ 1 & 3 \end{pmatrix} \]

Prediction for \( \det(B) \): \[ \]

Compute: \( \det(B) = \)

\[ C = \begin{pmatrix} 4 & -2 \\ 2 & 6 \end{pmatrix} \]

Prediction for \( \det(C) \): \[ \]

Compute: \( \det(C) = \)

Let \( D = \begin{pmatrix} 2 & -1 \\ 2 & -3 \end{pmatrix} \). Compute: \( \det(D) = \)

Let \( E = \begin{pmatrix} 2 & -1 \\ 3 & 0 \end{pmatrix} \). Prediction for \( \det(E) \): \[ \]

Compute: \( \det(E) = \)

(How is \( E \) related to \( A \) and \( D \)?)

3. \[ \det \begin{pmatrix} 1 & 2 & 7 & 8 & 9 \\ 0 & 3 & 10 & -15 & 64 \\ 0 & 0 & 5 & -6 & 12 \\ 0 & 0 & 0 & 6 & 101 \\ 0 & 0 & 0 & 0 & -1 \end{pmatrix} = \]

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