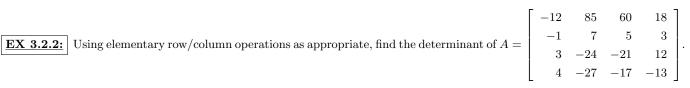
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Perform row operations until either a triangular matrix or matrix with a row or column of all zeros is attained:

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$$\begin{split} |A| \xrightarrow{R_1 \leftrightarrow R_2} (-1) \begin{vmatrix} -1 & 7 & 5 & 3 \\ -12 & 85 & 60 & 18 \\ 3 & -24 & -21 & 12 \\ 4 & -27 & -17 & -13 \end{vmatrix} \xrightarrow{(-12)R_1 + R_2 \to R_2 \atop 4R_1 + R_4 \to R_4} (-1) \begin{vmatrix} -1 & 7 & 5 & 3 \\ 0 & 1 & 0 & -18 \\ 0 & -3 & -6 & 21 \\ 0 & 1 & 3 & -1 \end{vmatrix} \\ \\ \frac{3R_2 + R_3 \to R_3}{(-1)R_2 + R_4 \to R_4} (-1) \begin{vmatrix} -1 & 7 & 5 & 3 \\ 0 & 1 & 0 & -18 \\ 0 & 0 & -6 & -33 \\ 0 & 0 & 3 & 17 \end{vmatrix} \xrightarrow{2R_4 \to R_4} (-1) \begin{pmatrix} 1 \\ 2 \end{pmatrix} \begin{vmatrix} -1 & 7 & 5 & 3 \\ 0 & 1 & 0 & -18 \\ 0 & 0 & -6 & -33 \\ 0 & 0 & 6 & 34 \end{vmatrix} \\ \\ \frac{R_3 + R_4 \to R_4}{(-1)} (-1) \begin{pmatrix} 1 \\ 2 \end{pmatrix} \begin{vmatrix} -1 & 7 & 5 & 3 \\ 0 & 1 & 0 & -18 \\ 0 & 0 & -6 & -33 \\ 0 & 0 & 0 & 1 \end{vmatrix} \xrightarrow{(*)} (-1) \begin{pmatrix} 1 \\ 2 \end{pmatrix} \begin{bmatrix} -1 (1)(1)(-6)(1) \end{bmatrix} = \boxed{-3} \end{split}$$

(*) The final matrix is upper triangular, hence its determinant is the product of its main diagonal entries.