

TUTORS: THIS IS A TAKE HOME QUIZ

Using determinants, determine if the following matrices have inverses.

$$[a] \begin{bmatrix} -2 & 0 & 3 & -1 \\ 0 & 4 & 2 & 1 \\ -4 & 1 & 5 & -3 \\ 2 & 0 & -1 & 3 \end{bmatrix}$$

$$[b] \begin{bmatrix} -2 & 1 & 3 & -1 \\ 0 & 4 & 2 & 1 \\ -4 & 1 & 5 & -3 \\ 2 & 0 & 0 & 3 \end{bmatrix}$$

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If A is a 2×2 matrix and $\det A = 5$, find $\det 3A$. **HINT:** Let $A = \begin{bmatrix} a & b \\ c & d \end{bmatrix}$.

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Write the partial fraction decomposition of the following.

$$[a] \frac{3x - 2}{x^2 - 5x - 6}$$

$$[b] \frac{x^2 - 1}{x^3 - 4x^2 + 4x}$$

$$[c] \frac{2x^2 + 5}{x^3 + 9x}$$

$$[d] \frac{x^4}{(x + 2)^2}$$

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