QUESTION

Evaluate the determinant of the matrix $\begin{pmatrix} 1 & 1 & 2 \\ -1 & 0 & 1 \\ 2 & 1 & 1 \end{pmatrix}$.

ANSWER

$\det \begin{pmatrix} 1 & 1 & 2 \\ -1 & 0 & 1 \\ 2 & 1 & 1 \end{pmatrix} = 1(0 - 1) - 1(-1 - 2) + 2(-1 - 0)$

$= -1 - 1(-3) + 2(-1) = -1 + 3 - 2 = 0$