Answer on Question #41341– Math - Linear Algebra

Question:

Compute the determinant using elements in the first row:

$$A = \begin{vmatrix} 1 & 5 & 4 \\ 0 & -7 & -8 \\ 3 & 7 & 1 \end{vmatrix}$$

a. -7
b.32
c. -27
d. 3

Solution:

$$A = \begin{vmatrix} 1 & 5 & 4 \\ 0 & -7 & -8 \\ 3 & 7 & 1 \end{vmatrix} = (-1)^2 * 1 * \begin{vmatrix} -7 & -8 \\ 7 & 1 \end{vmatrix} + (-1)^3 * 5 * \begin{vmatrix} 0 & -8 \\ 3 & 1 \end{vmatrix} + (-1)^4 * 4 * \begin{vmatrix} 0 & -7 \\ 3 & 7 \end{vmatrix} = 1 * \begin{vmatrix} -7 & -8 \\ 7 & 1 \end{vmatrix} - 5 * \begin{vmatrix} 0 & -8 \\ 3 & 1 \end{vmatrix} + 4 * \begin{vmatrix} 0 & -7 \\ 3 & 7 \end{vmatrix} = (-7) + 56 - 5 * 24 + 4 * 21 = 13.$$

Answer:

The correct answer is 13.