

Answer on Question #37920, Math, Matrix | Tensor Analysis.

Question.

A is a square matrix of order 'n' has its determinant value as 5. If all the elements are multiplied by 2, its determinant value becomes 40. Then what is the value of 'n' ?

Solution.

Due to the fact that $\det(\lambda A) = \lambda^n \det(A)$, where A is square matrix $n \times n$ we obtain:

$$\det(2A) = 2^n \det(A) = 2^n \cdot 5 = 40.$$

Thus, $n = \log_2 \frac{40}{5} = \log_2 8 = 3$. So, A is 3×3 matrix.

Answer.

3.