

Exemplar Problems

Determinants

1.

$$\begin{vmatrix} x^2 - x + 1 & x - 1 \\ x + 1 & x + 1 \end{vmatrix}$$

Solution:

Given, $\begin{vmatrix} x^2 - x + 1 & x - 1 \\ x + 1 & x + 1 \end{vmatrix}$

[Applying $C_1 \rightarrow C_1 - C_2$]

$$= \begin{vmatrix} x^2 - 2x + 2 & x - 1 \\ 0 & x + 1 \end{vmatrix}$$

$$= (x^2 - 2x + 2) \cdot (x + 1) - (x - 1) \cdot 0$$

$$= x^3 - 2x^2 + 2x + x^2 - 2x + 2$$

$$= x^3 - x^2 + 2$$