Assignment 2

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Question :

Without expanding at any stage , find the value of :

$$\begin{vmatrix} a & b & c \\ a+2x & b+2y & c+2z \\ x & y & z \end{vmatrix}$$

Solution :

Let the given Determinant be

$$\mathrm{M} = \begin{vmatrix} a & b & c \\ a+2x & b+2y & c+2z \\ x & y & z \end{vmatrix}$$

First we use Row operation on R_2

$R_2 \to R_2 - 2R_3$

$$\Rightarrow M = \begin{vmatrix} a & b & c \\ a & b & c \\ x & y & z \end{vmatrix}$$

Clearly in the above Determinant M,

R_1 and R_2 are identical

$\Rightarrow M = 0$

$$\therefore \begin{vmatrix} a & b & c \\ a+2x & b+2y & c+2z \\ x & y & z \end{vmatrix} = 0$$