Assignment 2

AVVARU BHARAT

Download all python codes from

https://github.com/Bharat437/Matrix_Theory/tree/master/Assignment3/Codes

and latex-tikz codes from

https://github.com/Bharat437/Matrix_Theory/tree/master/Assignment3

1 Question

(Section 3.10) 9. Show that $\begin{vmatrix} x & a & x+a \\ y & b & y+b \\ z & c & z+c \end{vmatrix} = 0$

2 Explanation

Apply Transformations:

$$\begin{vmatrix} x & a & x+a \\ y & b & y+b \\ z & c & z+c \end{vmatrix} \tag{2.0.1}$$

$$\xleftrightarrow{C_3 \leftarrow C_3 - C_2} \begin{vmatrix} x & a & x \\ y & b & y \\ z & c & z \end{vmatrix} \tag{2.0.2}$$

If any two rows or two columns are same then the determinant of matrix is 0.

In (2.0.2), we observe that the 1st and 3rd columns are equal.

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