EE5609: Matrix Theory
Assignment-2

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***Abstract*—This document contains a solution for proving the determinant of the given matrix is zero.**

Download the python codes from

https://github.com/pavanmanesh/EE5609/blob/master/Assignment2/codes

and latex-tikz codes from

https://github.com/pavanmanesh/EE5609/tree/master/Assignment2

1 PROBLEM

$$\begin{vmatrix} 0 & a & -b \\ -a & 0 & c \\ b & c & 0 \end{vmatrix} = 0 \tag{1.0.1}$$

2 SOLUTION

Proceeding to the solution by solving the determinant of left hand side matrix of (1.0.1)

$$= 0\begin{vmatrix} 0 & -c \\ c & 0 \end{vmatrix} - a\begin{vmatrix} -a & -c \\ b & 0 \end{vmatrix} - b\begin{vmatrix} -a & 0 \\ b & c \end{vmatrix} \tag{2.0.1}$$

$$= 0 + -a(-(-bc)) - b(-ac) \tag{2.0.2}$$

$$= -abc + abc \tag{2.0.3}$$

$$= 0 \tag{2.0.4}$$

Hence, the determinant is equal to 0.