AQA – Matrices – A2 Further Mathematics P2

1. June/2021/Paper_7367/2/No.1

> Which of the following matrices is singular?
>
> Circle your answer.
>
> **[1 mark]**

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix} \qquad \begin{bmatrix} 1 & 1 \\ 2 & 2 \end{bmatrix} \qquad \begin{bmatrix} 0 & 1 \\ 1 & 0 \end{bmatrix} \qquad \begin{bmatrix} 1 & -2 \\ 1 & 2 \end{bmatrix}$$

2. June/2021/Paper_7367/2/No.11

The Cartesian equation of the line L_1 is

$$\frac{x+1}{3} = \frac{-y+5}{2} = \frac{2z+5}{3}$$

The Cartesian equation of the line L_2 is

$$\frac{2x-1}{2} = \frac{y-14}{m} = \frac{z+12}{p}$$

The non-singular matrix $\mathbf{N} = \begin{bmatrix} -0.5 & 1 & 2 \\ 1 & b & 4 \\ -3 & -2 & c \end{bmatrix}$ maps the line L_1 onto the line L_2

Calculate the values of the constants b, c, m and p

Fully justify your answers.

[9 marks]