Matrices – 2020 O Level Math D

1. Nov/2020/Paper_11/No.22

$$\mathbf{A} = \begin{pmatrix} 1 & 2 \\ -4 & 3 \end{pmatrix} \quad \mathbf{B} = \begin{pmatrix} 0 & 2 \\ 2 & -3 \end{pmatrix}$$

(a) Find **AB**.

( ) [2]

(b) **C** and $\mathbf{C}^{-1}$ are 2 by 2 matrices.

Write down the 2 by 2 matrix which is equivalent to $\mathbf{CC}^{-1}\mathbf{B}$.

( ) [1]

2. Nov/2020/Paper_12/No.24

$\mathbf{A} = \begin{pmatrix} 2 & 1 \\ -3 & -2 \end{pmatrix}$

(a) Find $\mathbf{A}^2$.

$\begin{pmatrix} & \\ & \end{pmatrix}$ [2]

(b) The matrix $\mathbf{X}$ satisfies the equation $\mathbf{X}\begin{pmatrix} 2 & 1 \\ -3 & -2 \end{pmatrix} = \begin{pmatrix} 0 & 2 \end{pmatrix}$.

Find $\mathbf{X}$.

$\mathbf{X} =$ [2]

3. June/2020/Paper_11/No.19

$$\mathbf{P} = \begin{pmatrix} 4 & -2 \\ -1 & 3 \end{pmatrix} \qquad \mathbf{Q} = \begin{pmatrix} 0 & -1 \\ 5 & 4 \end{pmatrix} \qquad \mathbf{R} = \begin{pmatrix} 4 & 1 \\ t & 2 \end{pmatrix}$$

(a) Find $\mathbf{P} - 3\mathbf{Q}$.

( ) [2]

(b) **(i)** The determinant of $\mathbf{R}$ is 11.

Find t.

$t =$ ..... [1]

(ii) Find $\mathbf{R}^{-1}$.

( ) [1]

4. June/2020/Paper_12/No.25

$\mathbf{A} = \begin{pmatrix} 2 & 0 \\ -3 & -1 \end{pmatrix}$

(a) Evaluate $2\mathbf{A} - \begin{pmatrix} -5 & 4 \\ 0 & 3 \end{pmatrix}$.

$\begin{pmatrix} & \\ & \end{pmatrix}$ [2]

(b) Find $|\mathbf{A}|$.

..... [1]

(c) Find $\mathbf{A}^{-1}$.

$\begin{pmatrix} & \\ & \end{pmatrix}$ [1]

(d) Find the matrix $\mathbf{X}$, where $\mathbf{XA} = \begin{pmatrix} 4 & -2 \end{pmatrix}$.

$\mathbf{X} =$ [2]