

Assignment 8

(5 questions
x 2 = 10 marks)

1. Let $A = \begin{pmatrix} 2 & 0 \\ 4 & 1 \end{pmatrix}$. Compute A^3 , A^{-3} , $A^2 - 2A + I$.

2. Find the inverse of $\begin{pmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{pmatrix}$

3. Evaluate $\begin{vmatrix} 4 & -9 & 9 & 2 \\ -2 & 5 & 6 & 4 \\ 1 & 2 & -5 & -3 \\ 1 & -2 & 0 & -2 \end{vmatrix}$

4. Show the determinant $\begin{vmatrix} \sin \theta & \cos \theta & 0 \\ -\cos \theta & \sin \theta & 0 \\ \sin \theta - \cos \theta & \sin \theta + \cos \theta & 1 \end{vmatrix}$

does not depend on θ .

5. Given that $\begin{vmatrix} a & b & c \\ d & e & f \\ g & h & i \end{vmatrix} = -6$ find:

a) $\begin{vmatrix} d & e & f \\ g & h & i \\ a & b & c \end{vmatrix}$

b) $\begin{vmatrix} 3a & 3b & 3c \\ -d & -e & -f \\ 4g & 4h & 4i \end{vmatrix}$