

TEST 1
CLASS XII

TIME: 50 MIN

MM20

Each question carries 4 marks.

1. Construct a 2×2 matrix A , whose elements are given by $[a_{ij}] = \frac{(i+2j)^2}{2}$

2. If $A = \begin{pmatrix} 0 & -\tan \alpha/2 \\ \tan \alpha/2 & 0 \end{pmatrix}$ then show that

$$I + A = (I - A) \begin{pmatrix} \cos \alpha & -\sin \alpha \\ \sin \alpha & \cos \alpha \end{pmatrix}$$

3. Express the matrix A as the sum of a symmetric and a skew symmetric

Matrix, where $A = \begin{pmatrix} 2 & 4 & 0 \\ 1 & 2 & 3 \\ 3 & 6 & 1 \end{pmatrix}$

4. Let $A = \begin{pmatrix} 3 & 2 \\ 1 & 1 \end{pmatrix}$, find the numbers a and b such that $A^2 + aA + bI = O$, where I is the identity matrix of order 2. Hence find A^{-1} .

5. Solve the following system of equations

$$2x - 3y + 5z = 11$$

$$3x + 2y - 4z = -5$$

$$x + y - 2z = -3$$