

JEE MAIN MATRICES — INVERTIBLE MATRICES — PYQS

Max. Marks: 16

Questions: 4

Section A (MCQ) — 2 questions

Q.1 Let A, B and C be three 2×2 matrices with real entries such that $B = (I + A)^{-1}$ and $A + C = I$.

If $BC = \begin{bmatrix} 1 & -5 \\ -1 & 2 \end{bmatrix}$ and $CB \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 12 \\ -6 \end{bmatrix}$, then $x_1 + x_2$ is

[JEE Main 2026 (Online) 28th January Morning Shift]

- (1) 4 (2) 2 (3) 0 (4) -2

Scan or tap for the
full solution



Q.2 Let $A = [a_{ij}]$ be a square matrix of order 2 with entries either 0 or 1. Let E be the event that A is an invertible matrix. Then the probability P(E) is :

[JEE Main 2025 (Online) 24th January Evening Shift]

- (1) $\frac{3}{8}$ (2) $\frac{1}{8}$ (3) $\frac{3}{16}$ (4) $\frac{5}{8}$

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Section B (Numerical) — 2 questions

Q.3 Consider the matrices $A = \begin{bmatrix} 2 & -2 \\ 4 & -2 \end{bmatrix}$ and $B = \begin{bmatrix} 3 & 9 \\ 1 & 3 \end{bmatrix}$. If matrices P and Q are such that $PA = B$ and $AQ = B$, then the absolute value of the sum of the diagonal elements of $2(P + Q)$ is _____.

[JEE Main 2026 (Online) 2nd April Evening Shift]

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Q.4 Let A be a 2×2 symmetric matrix such that $A \begin{bmatrix} 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 3 \\ 7 \end{bmatrix}$ and the determinant of A be 1. If $A^{-1} = \alpha A + \beta I$, where I is an identity matrix of order 2×2 , then $\alpha + \beta$ equals _____.

[JEE Main 2024 (Online) 4th April Evening Shift]

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ANSWER KEY

Section A (MCQ) — 2 questions

Ques.	1	2													
Ans.	3	1													

Section B (Numerical) — 2 questions

Ques.	3	4													
Ans.	34	5													