MP Board Class 12, 2026 Mathematics Question Paper

Time Allowed :3 Hours	**Maximum Marks :**100	**Total questions :**24

General Instructions

Read the following instructions very carefully and strictly follow them:

1. The paper is divided into Section A and Section B.
2. Section A includes objective-type, short answer, and long answer questions.
3. All questions in Section A are compulsory.
4. Section B contains elective questions based on the chosen topic.
5. Answers must be written legibly within the word limit.
6. Use of unfair means or electronic devices is prohibited.
7. Follow the correct format and instructions for each section.

1. If A is a column matrix then transpose of A will be-

(A) A Column matrix.

(B) A row matrix.

(C) A Square matrix

(D) zero matrix

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2. Maximum value of $\sin x$ in interval $[0, \frac{\pi}{4}]$ is

(A) $\frac{\sqrt{3}}{2}$

(B) 1

(C) $\frac{1}{2}$

(D) $\frac{1}{\sqrt{2}}$

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3. i) If $A = \{1, 2, 3\}$ then number of relations containing (1,2) and (1,3) which are reflexive and symmetric but not transitive are:

(A) 0

(B) 1

(C) 2

(D) 3

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4. Range of principal value of $\cos^{-1} x$ is

(A) $(0, \pi)$

(B) $[-\frac{\pi}{2}, \frac{\pi}{2}]$

(C) R

(D) $[0, \pi]$

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5. For any matrix A, if $A = -A'$ then:

(A) A is a symmetric matrix

(B) A is a skew symmetric matrix

(C) A is a zero matrix

(D) A is an identity matrix

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6. If $P(A) = \frac{1}{2}, P(B) = \frac{1}{4}$ and A and B are independent events then $P(A) \cdot P(B) =$

(A) $\frac{1}{8}$

(B) $\frac{1}{2}$

(C) $\frac{3}{4}$

(D) 0

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7. Write the change in area of a circle with respect to its radius.

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8. Write general solution of differential equation $\frac{dy}{dx} = e^{x+y}$.

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9. Find the value of $2\sin^{-1}\frac{1}{2}$.

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10. If $A = \begin{bmatrix} 2 & 0 \\ 0 & 3 \end{bmatrix}$, then write the value of $adj\ A$.

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11. Prove that the function $f : \mathbb{R} \to \mathbb{R}$ given by $f(x) = 2x$ is one-one and onto.

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12. Show that $3\sin^{-1} x = \sin^{-1}(3x - 4x^3)$, $x \in \left[-\frac{1}{2}, \frac{1}{2}\right]$.

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13. Find the values of $\sin^{-1}(\sin\frac{3\pi}{5})$.

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14. Find differential coefficient of function $\cos[\sin(x^3)]$ with respect to x.

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15. Show that the function given by $f(x) = x^2 - 3x + 17, x \in R$, is increasing function on R.

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16. The radius of a circle changes at the rate of 0.7 cm/sec. What is the rate of change of its circumference?

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17. A balloon which always remains spherical, has a variable diameter $\frac{3}{2}(2x + 1)$. Find the rate of change of its volume with respect to x.

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18. Find the general solution of differential equation

$$\frac{dy}{dx} = \frac{1+y^2}{1+x^2}$$
