

Karnataka Board Class 12 2026 Mathematics Question Paper

Time Allowed :3 Hours

Maximum Marks :70

Total questions :37

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 questions.
3. All questions in Section A are compulsory.
4. Section B includes short answer, and long answer type questions.
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.

Section - A

1. If a relation R in the set $\{1, 2, 3\}$ be defined by $R = \{(1, 1), (2, 2)\}$, then R is

- (A) Symmetric but not transitive
- (B) Transitive but not symmetric
- (C) Symmetric and transitive
- (D) Neither symmetric nor transitive

2. The domain of $\tan^{-1} x$ is

- (A) $(-\frac{\pi}{2}, \frac{\pi}{2})$
 - (B) $(0, \pi)$
 - (C) $[-1, 1]$
 - (D) $(-\infty, \infty)$
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3. A matrix has 13 elements. The number of possible different orders it can have is

- (A) 1
 - (B) 2
 - (C) 3
 - (D) 4
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4. For the matrix $A = \begin{bmatrix} 5 & 0 \\ 0 & 5 \end{bmatrix}$, the value of $|\text{adj } A|$ is

- (A) 25
 - (B) 5
 - (C) 0
 - (D) 1
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5. The derivative of $\sin^{-1} x$ exists in the interval

- (A) $[-1, 1]$
 - (B) $(-1, 1)$
 - (C) \mathbb{R}
 - (D) $(-\frac{\pi}{2}, \frac{\pi}{2})$
-

6. If $x - y = \pi$, then $\frac{dy}{dx}$ is

- (A) π
 - (B) $-\pi$
 - (C) 1
 - (D) -1
-

7. The minimum value of $f(x) = |x|$, $x \in \mathbb{R}$ is

- (A) 0
- (B) 1
- (C) 2

(D) Does not exist

8. Statement I: The function $f(x) = x^2$ is decreasing in the interval $(0, \infty)$.

Statement II: Any function $y = f(x)$ is decreasing if $\frac{dy}{dx} < 0$.

Which of the following is correct?

- (A) Both the Statements I and II are true
 - (B) Both the Statements I and II are false
 - (C) Statement I is true and Statement II is false
 - (D) Statement I is false and Statement II is true
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9. The antiderivative of $\frac{1}{x\sqrt{x^2-1}}$, $x > 1$ with respect to x is

- (A) $\sin^{-1} x + C$
 - (B) $\cos^{-1} x + C$
 - (C) $\sec^{-1} x + C$
 - (D) $\cot^{-1} x + C$
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10. The value of

$$\int_{-\frac{\pi}{2}}^{\frac{\pi}{2}} \sin^7 x \, dx$$

is

- (A) 1
 - (B) 0
 - (C) -1
 - (D) 7
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11. If \vec{a} is a nonzero vector of magnitude a and λ is a nonzero scalar, then $\lambda\vec{a}$ is a unit vector if

- (A) $\lambda = 1$
- (B) $\lambda = -1$
- (C) $a = |\lambda|$

(D) $a = \frac{1}{|\lambda|}$

12. The position vector of the midpoint of the line joining the points $P(2, 3, 4)$ and

$Q(4, 1, -2)$ is

(A) $3\hat{i} + 2\hat{j} + \hat{k}$

(B) $3\hat{i} + 2\hat{j} - \hat{k}$

(C) $\hat{i} - \hat{j} - 3\hat{k}$

(D) $-\hat{i} + \hat{j} + 3\hat{k}$

13. The direction ratios of the x -axis are

(A) $(0, k, 0)$

(B) $(0, 0, k)$

(C) $(k, 0, 0)$

(D) (k, k, k)

14. The probability of obtaining an even prime number on each die when a pair of dice is rolled is

(A) $\frac{1}{36}$

(B) $\frac{1}{6}$

(C) $\frac{1}{18}$

(D) $\frac{1}{4}$

15. If A and B are independent events with $P(A) = 0.3$ and $P(B) = 0.4$, then $P(A \cap B)$ is

(A) 1.2

(B) 0.12

(C) 0.7

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

II. Fill in the blanks by choosing the appropriate answer from those given in the bracket

[0,3,-1,2,-2,1]

16. The left hand derivative of $|x|$ with respect to x at $x = 0$ is

17. The point of inflection of the function $f(x) = x^3$ in the interval $[-1, 1]$ is

18. If m and n are respectively the order and degree of the differential equation

$$2x^2 \frac{d^2y}{dx^2} - 3 \frac{dy}{dx} + y = 0, \text{ then } m + n =$$

19. The value of $\hat{i} \cdot \hat{i} + \hat{j} \cdot \hat{j}$ is

20. If F is an event of a sample space S , then $P(S|F) =$
