Karnataka Board Class 12 2026 Mathematics Question Paper

| **Time Allowed :**3 Hours | **Maximum Marks :**70 | **Total questions :**37 |

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

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

(A) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

(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) $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

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

(A) π

(B) $-\pi$

(C) 1

(D) -1

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

(A) 0

(B) 1

(C) 2

(D) Does not exist

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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 $\dfrac{dy}{dx} < 0$.

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 $\dfrac{1}{x\sqrt{x^2 - 1}}$, $x > 1$ 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) $a = \dfrac{1}{|\lambda|}$

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

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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)

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

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

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

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

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

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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) $\dfrac{3}{4}$

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

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

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

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

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18. If m and n are respectively the order and degree of the differential equation
$2x^2 \dfrac{d^2y}{dx^2} - 3\dfrac{dy}{dx} + y = 0$**, then $m + n =$**

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

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