MATHS

BOOKS - JBD PUBLICATION

MODEL PAPER (14)

Exercise

1. Which of the following is the empty set?

A. $\{x : x^2 - 1 = 0, x \in R\}$

B. $\{x : x^2 - 1, x \in R\}$

C. $\{x : x^2 - 4 = 0, x \in R\}$

D. $\{x : x^2 - x - 2 = 0, x \in R\}$

Answer:

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2. Range of f(x)=1/(1-2cosx) is:

A. $\left[\frac{1}{3}, 1\right]$

B. $\left[-\frac{1}{3}, 1\right]$

C. $(-\infty, -1) \cup \left[\frac{1}{3}, \infty\right)$

D. $\left[-1, \frac{1}{3}\right]$

Answer:

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3. The radius of a circle whose arc of length 20π subtends an angle of $\frac{2\pi}{3}$ radians at the centre is:

A. 25 cm

B. 35 cm

C. 30 cm

D. none of these

Answer:

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4. The least value of p which makes the roots of the equations $x^2 + 5x + p = 0$ imaginary is:

A. 4

B. 5

C. 6

D. 7

Answer:

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5. Number of four digit even numbers that can be formed using 0,1,2,3,4,5,6 without repition is:

A. 420

B. 120

C. 300

D. none of these

Answer:

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6. The value of $9^{\frac{1}{3}}, 9^{\frac{1}{9}}.9^{\frac{1}{27}}.....up \to \infty$ is:

A. 1

B. 3

C. 6

D. none of these

Answer:

7. The value of x such that the points (8,1),(x,-4) and (2,-5) are collinear is:

A. 0

B. 3

C. 5

D. none of these

Answer:

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8. The latus rectum of parabola $9x^2 - 6x + 36y + 19 = 0$ is:

A. 4

B. 2

C. 6

D. none of these

Answer:

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9. $\lim_{n \to \infty} \frac{1^2 + 2^2 + 3^2 + \ldots\ldots\ldots + n^2}{n^3}$ is equal to:

A. 1

B. $\frac{1}{2}$

C. $\frac{1}{3}$

D. none of these

Answer:

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10. Two dice are thrown simultaneously. The probability of obtainng a total score of 5 is,

A. $\frac{1}{9}$

B. $\frac{2}{9}$

C. $\frac{4}{9}$

D. none of these

Answer:

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11. Show that: $\frac{\cos 18^\circ + \sin 18^\circ}{\cos 18^\circ - \sin 18^\circ} = \cot 27^\circ,$

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12. Prove that

$$\frac{\cos(90^\circ + \theta)\sec(-\theta)\tan(180^\circ - \theta)}{\sec(360^\circ - \theta)\sin(180^\circ + \theta)\cot(90^\circ - \theta)} = -1$$

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13. Simplify: $2i^2 + 6i^3 + 3i^{16} - 6i^{19} + 4i^{25}$

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14. Find the constant term in the expansion of

$$\left[\frac{4x^2}{3} - \frac{3}{2}x\right]^9$$

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15. Find the value of $(101)^4$ using Binomial theorem.

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16. Find the ratio in which YZ-plane divides the line segment formed by joining the point (-2,4,70 and (3,-5,8)

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17. Which of the following sentences are statement? Give reason for your answer.

The sum of all interior angles of a triangles is 180°

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18. Which of the following sentences are statement? Give reason for your answer.

Today is a windy day

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19. Are the following pairs of the statement negation of each other

The number x is not a rational number

The number is x is not an irrational number

20. In a group of 400 people, 250 can speak Hindi and 200 can speak English. How many people can speak both Hindi and English?

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21. Find the domain and range of the following functions:

$f(x) = \sqrt{16 - x^2}$

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22. Solve: sin3x+cos2x=0

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23. In how many ways can 5 boys and 3 girls sit in a row so that no two girls are sit together?

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24. A bag contains 5 black and 6 red balls. Determine the number of ways in which 2 black and 3 red balls can be selected.

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25. How many terms of the series 24+21+18+.....may be taken so that the sum is 90?

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26. Find three numbers in G.P whose product is 512 and sum is 28.

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27. Find the equation of the right bisector of the line segment joining the points (3, 4) and (-1, 2).

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28. Find the equation of the parabola which is symmetric about y-axis and passes through the point $(2, -3)$.

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29. If $y = \frac{\sin^2 x}{1 + \cos^2 x}$ then find the value of $\frac{dy}{dx}$.

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30. Evaluate: $\lim_{x \to 0} \frac{\cos 2x - 1}{\cos x - 1}$

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31. To dice are rolled simultaneously. Find the probability that:

the sum of numbers on the two dice is less than 9.

32. To dice are rolled simultaneously. Find the probability that:

It is not a doublet.

33. Evaluate $2x^4 + 5x^3 + 7x^2 - x + 41$ when $x = -2 - \sqrt{3}i.$

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34. Write the complex number $Z = \sqrt{3} + i$ in polar form and hence find the modulus and argument of Z.

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35. Solve the following inequality: $-3 \leq 4 - \frac{7x}{2} \leq 18.$

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36. Find the pairs of consecutive even positive integers which are larger than 5 and their sum is less than 20.

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37. Find the derivative secx w.r.t x

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38. Evaluate:

$$\lim_{x \to 1} \frac{x^{15} - 1}{x^{10} - 1}$$

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39. Find the mean deviation about the mean of the following data:

x	5	7	9	10	12	15
f	8	6	2	2	2	6

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