MATHS

BOOKS - JBD PUBLICATION

MODEL PAPER (12)

Exercise

1. $A \cap (A \cup B)'$ is equal to:

A. A

B. B

C. ϕ

D. $A \cap B$

Answer:

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2. If $f(x) = \frac{x-1}{x+1}$, then:

A. $f\left(\frac{1}{x}\right) = f(x)$

B. $f\left(\frac{1}{x}\right) = -f(x)$

C. $f\left(\frac{1}{x}\right) = f(x)$

D. $f\left(\frac{1}{x}\right) = \frac{1}{f(x)}$

Answer:

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3. The value of $\frac{\sin\pi}{14}\frac{\sin(3\pi)}{14}\frac{\sin(5\pi)}{14}$ is equal to:

A. 0

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

C. $\frac{1}{4}$

D. $\frac{1}{8}$

Answer:

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4. If z is purely real number such that $Re(z) < 0$, then argument (z) is equal to:

A. π

B. $-\frac{\pi}{2}$

C. 0

D. none of these

Answer:

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5. The number of ways in which n distinct objects can be put into two different boxes is:

A. 2n

B. n^2

C. 2^n

D. none of these

Answer:

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6. The G.M. between -2i and 8i is:

A. ± 2

B. ± 4

C. $\pm 4i$

D. none of these

Answer:

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7. A line passes through the point (2,2) and is perpendicular to the line $3x + y = 3$, then its y - intercept is

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

B. $\frac{2}{3}$

C. 1

D. $\frac{4}{3}$

Answer:

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8. The eccentricity of the hyperbola whose latus rectum is half of its transverse axis is:

A. $\frac{1}{\sqrt{2}}$

B. $\sqrt{\frac{3}{2}}$

C. $\sqrt{\frac{2}{3}}$

D. none of these

Answer:

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9. $\lim_{x \to 0} \frac{x}{\tan x}$ is equal to:

A. 0

B. 1

C. 2

D. none of these

Answer:

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10. If A and B are mutually exclusive events then:

A. $P(A) \leq P(\overline{B})$

B. $P(A) \geq P(\overline{B})$

C. $P(A) < P(\overline{B})$

D. none of these

Answer:

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11. Prove that : $\frac{\tan\left(\frac{\pi}{4}+x\right)}{\tan\left(\frac{\pi}{4}-x\right)}=\left(\frac{1+\tan x}{1-\tan x}\right)^2$.

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12. Prove the following:

$\cos\left(\frac{3\pi}{2}+x\right)\cos(2\pi+x)\left[\cot\left(\frac{3\pi}{2}-x\right)+\cot(2\pi+x)\right]=1$

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13. Express: $(-i)(2i)\left(-\frac{1}{8}i\right)^3$ in the form of a+ib.

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14. Find the fourth term from the end in the expansion of $\left[\frac{x^3}{2} - \frac{2}{x^3}\right]^9$.

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15. Show that $9^{n+1} - 8n - 9$ is divisible by 64, whenever n is a positive integer.

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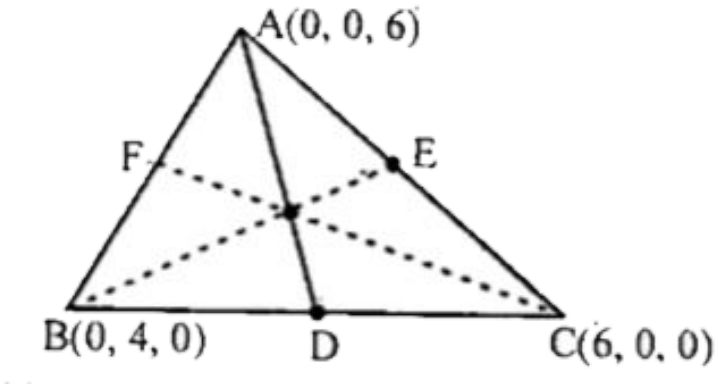
16. Find the lenghts of the medians of the triangle with vertices A(0,0,6), B(0,4,0) and C(6,0,0)



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17. Find out which of the following sentences are statements and which are not justify your answer

A triangle has four sides.

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18. Find out which of the following sentences are statements and which are not justify your answer

Do you work.

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19. Find the component statement of the following and check whether they are true or not.

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20. Let A={a,b,c} and B={1,2,3}. Find the number of relations from A into B.

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21. Show tha:

$\cos 6A = 32\cos^6 A - 48\cos^4 A + 18\cos^2 A - 1$

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22. $1^2 + 2^2 + 3^3 + \ldots . + n^2 = \frac{n(n+1)(2n+1)}{6}$

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23. If $\hat{} \; nC_3 = 56$ and $\hat{} \; nP_3 = 336$, find n .

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24. The English alphabet has 5 vowels and 21 consonants. How many words with two different vowels and 2 different

consonants can be formed from the alphabet ?

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25. The sum of two numbers is 6 times their G.M. show that numbers are in the ratio $3+2\sqrt{2}:3-2\sqrt{2}$.

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26. Between 1 and 31, n A.M's have been inserted in sucha a way that the ratio of 7th and (m-1)th means is 5:9, find the value of m.

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27. In which ratio is the line joining the points (1,3) and (2,7) is divided by the line 3x+y=9.

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28. Find the equation of hyperbola whose foic are $(0, \pm 12)$ and length of latus rectum is 36.

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29. Evaluate: $\lim_{x \to 0} \frac{1 - \cos 2x}{3 \tan^2 x}$

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30. Differentiate: $\frac{a\cos x + b\sin x + c}{\sin x}$ w.r.t.x.

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31. Three coins are tossed once. Find the probability of getting

at least two heads.

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32. Three coins are tossed once. Find the probability of getting

at most two tails.

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33. If $(x+iy)^3 = u+iv$, then show that $\frac{u}{x}+\frac{v}{y} = 4(x^2-y^2)$

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34. Find the square root fo $1-i$.

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35. Find all pairs of consecutive odd positive integers both of which are smaller than 10 such that their sum is more than 11.

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36. Solve the given inequality $-5 < \frac{x-2}{5} \leq 0$

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37. Find $\lim_{x \to 0} f(x)$ where $f(x) = \begin{cases} 2x+3 & x \leq 0 \\ 3(x+1) & x > 0 \end{cases}$

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38. Find the derivative of (sin x + cos x) from the first principle.

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39. Find the mean deviation from mean:

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40. Find the mean for the following data:

13,17,16,14,11,13,10,16,18,12,17

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