



MATHS

BOOKS - JBD PUBLICATION

MODEL PAPER (1)



1. Let n(U)=500. If A and B are such that n(A)=200, n(B)=300 and $n(A \cap B)$ =100 then $n(A' \cap B')$ is equal to:

A. 200

B. 300

C. 100

D. 150

Answer:



2. If f(x)=ax+b, where a and b are integers,

f(-1)=-7 and f(2)=8, then a and b are equal to:

3. $\sin^2 45^\circ \, - \, \sin^2 30^\circ$ is equal to:





4. $^{\hat{}} 5C_1 + ^5 C_2 + ^5 C_3 + ^5 C_4 + ^5 C_5$ is equal to

A. 30

B. 31

C. 32

D. None of these



5. If g_1, g_2 are two G.M's between two numbers a and b, then $rac{g_1^2}{g_2}+rac{g_2^2}{g_1}$ is equal to:

A. ab

$$\mathsf{B.}\,\frac{a+b}{ab}$$

$$C.a+b$$

D. None of these

Answer:

6. The area of a triangle with vertices at (-4,-1),

(1,2) and (4,-3) is:

A. 17

B. 16

C. 15

D. None of these



7. The distance between the directrices of the

ellipse
$$rac{x^2}{4}+rac{y^2}{9}=1$$
 is:
A. $rac{16}{\sqrt{3}}$
B. $rac{21}{\sqrt{5}}$
C. $rac{18}{\sqrt{5}}$

D. None of these

Answer:

8. If
$$y = rac{1 + an x}{1 - an x}$$
, then value of $rac{dy}{dx}$ is:

A.
$$\sec^2 \Bigl(rac{\pi}{4} + x \Bigr)$$

B. $\cos^2 \Bigl(rac{\pi}{4} + x \Bigr)$

C. 1

D. None of these



9. If P(A)=P(B)=x and $P(A \cap B) = P(\overline{A} \cap \overline{B}) = \frac{1}{3}$, then the value of x is:

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

B. $\frac{1}{3}$
C. $\frac{1}{4}$

D. None of these





12. Show that:
$$1+i^{10}+i^{100}+i^{1000}=2$$





13. Find the coefficients of x^4 in the expansions

of

$$\left(2-x+3x^2
ight)^6$$
 .



14. Show that the points (-1,2,1), (1,-2,5), (4,-7,8)

and (2,-3,4) are vertices of a parallelogram.

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

The number 6 has three prime factors.

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16. Find out which of the following sentences

are statements and which are not, justify your

answer

The moon revolves round the sun.



17. Combine the following statements using "if and only if'

p: if the sum of digit of a number is divisible

by3, then the numebr is divisible by 3.

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21. Prove that :

$$\tan 4\theta = \frac{4\tan\theta(1-\tan^2\theta)}{1-6\tan^2\theta+\tan^4\theta}.$$
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22. If
$$\sin x = \frac{3}{5}$$
, $\cos y = -\frac{12}{13}$, where x and y both lie in second quadrant, find the value of $\sin(x+y)$.



24. In how many ways can 6 girls and 4 boys be seated in a row so that no two boys are together?



25. Determine the value of n if $(n)C_3:^nC_2 = 5:1.$ Watch Video Solution

26. Which term of the sequence 24, `23 1/4, 22

1/2, 21 3/4, is the first negative term ?

27. If the G.P's 5,10,20,....and 1280,640, 320.....have their nth terms equal, find the value of n.



28. The base of an equilateral triangle with side 2a lies along the y-axis such that the mid-point of the base is at the origin. Find the vertices of triangle.



29. Find the equation of the circle passing through (0,0) and making intercepts 'a' and 'b' on the coordinate axes.



31. Find the derivative of cosx from first principle.

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32. In class XI of a school 40% of the students study Mathematics and 30% study Biology 10% of the class study both Mathematics and Biology. If a student is selected at random from the class, find the probability that he will be studying Mathematics or Biology.



33. If
$$3\left(\frac{\cos\pi}{6} + i\frac{\sin\pi}{6}\right)$$
=a+ib, then find the

values of a and b.

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34. Give the graphical solution of the following system of inequalities:

 $egin{aligned} &2x+y\leq 24, &x+y\leq 11, &2x+5y\leq 40,\ &x,y\geq 0. \end{aligned}$



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