



MATHS

BOOKS - JBD PUBLICATION

MODEL PAPER (13)



1. If A and B are any two sets, then $A\cup (A\cap B)$ is equal to

A. A

$\mathsf{B}.\,A\cap B$

С. В

D. ϕ

Answer:

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2. If
$$x \neq 1$$
 and $f(x) = \frac{x+1}{x-1}$ is a real

function, then f(f(f(2))) is

A. 1

B. 2

C. 3

D. 4

Answer:

3. If
$$\theta$$
 and ϕ are acute angles such that $\cos \theta = \frac{13}{14}$ and $\cos \phi = \frac{1}{7}$, then value of $(\theta - \phi)$ is equal to:

A. $-\frac{\pi}{3}$ B. $\frac{\pi}{3}$ C. $\frac{\pi}{2}$

D. none of these

Answer:





 $x^2 + px + q = 0$ has equal roots, then the

value of q is:



5. How many words, with or without meaning can be made from the letters of the word MONDAY, assuming that no letter is repeated, if, all letters are used but first letter is a vowel?

A. 120

B. 1

C. 720

D. 0

Answer:

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6. Let the angles A, B, C of $\triangle ABC$ be in A.P.

and let $b\!:\!c=\sqrt{3}\!:\!\sqrt{2}$. Then angle A is :

A. $75^{\,\circ}$

B. 60°

C. 45°

D. none of these

Answer:

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7. If the lines ax+12y+1=0, bx+13y+1=0 and

cx+14y+1=0 are concurrent, then a,b,c are in:

A. H.P

B. G.P.

C. A.P

D. none of these

Answer:

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8. The equation of a parabola whose focus is (-3,0) and dielectrix is x+5=0.

A.
$$y^2 = -4(x+4)$$

B. $x^2 = -4(y+4)$

$$\mathsf{C}.\,y^2=4(x+4)$$

D. none of these

Answer:

9. Let
$$y=rac{x}{x+5}$$
, then value of $rac{dy}{dx}$ is:
A. $rac{1+y}{y}$
B. y(1-y)
C. $1+y^2$

D. none of these

Answer:



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

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

D. none of these

Answer:



11. In a circle of diameter 40 cm, the length of a

chord is 20 cm. Find the length of minor arc of the chord.





14. Show that the middle term in the expansion of $\left(1+x
ight)^{2n}$ is $rac{1.3.5\ldots\left(2n-1
ight)}{n!}2^nx^n$, where





points (-4,6,10), (2,4,6) and (14,0,-20) are collinear.

Also find the ratio in which point B divides the

join of A and C.



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

All prime numbers are either even or odd.

18. In a group of 65 people, 40 like cricket, 10 like both cricket and tennis. How many like tennis only and not cricket? How many like tennis?



19. If
$$f(x) = x^3 - \frac{1}{x^3}$$
, find the value of $f(x) + f\left(\frac{1}{x}\right)$.

20.Provethat: $\frac{\tan^2 20 - \tan^2 \theta}{1 - \tan^2 20 \tan^2 \theta} = \tan 30 \tan \theta$ \bigcirc Watch Video Solution

21. Prove, by Mathematical Induction, that for all n \in N, $2.7^n + 3.5^n - 5$ is divisible by 24 .

22. How many different numbers between 100 and 1000 can be formed from the digits 0,1,2,3,4,5 and 6 assuming that in a number the digit can not be repeated? How many of these will be divisible by 5?

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23. The ratio of the.A.M. and G.M. of two positive numbers a and b is m : n. Show that

$$a\!:\!b=\left(m+\sqrt{m^2-n^2}
ight)\!:\!\left(m-\sqrt{m^2-n^2}
ight)$$



24. If the sum to infinity of the series $3 + 5r + 7r^2 + \dots is \frac{44}{9}$. Find r.

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25. The line 2x-3y=4 is perpendicular bisector of

the line AB. If the coordinates of A are (-3,1).

Fiind the coordinates of B.



26. Find the equation of ellipse whose vertices

are $(\pm 13, 0)$ and foci are $(\pm 5, 0)$







28. Find the derivative of $x^4 - 5$ at x=10.



29. In a single throw of two dice, find the probability of total of 9 or I 0.

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30. A bag contains 5 black and 3 white balls. Two balls are drawn at random. Find the probability of drawing

two black balls.





31. A bag contains 5 black and 3 white balls. Two balls are drawn at random. Find the probability of drawing two white balls.

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32. Convert
$$z=rac{i-1}{\cosrac{\pi}{3}+i\sinrac{\pi}{3}}$$
 in polar form.



34. Solve the following system of inequalities graphically:

 $x+2y\leq 10, x+y\geq 1, x-y\leq 0, x>0, y\geq 0$

35. In an experiment, a solution of a hydrochloric acid is to be kept between 30° and $35\,^\circ$ C. what is the range of the temperature in degree fahrenheit, if conversion formula is given by $C = \frac{5}{9}(F - 32)$ Where C and F represent temperature in degree celsius and degree fahrenheit respectively.



set of numbers:

25,50,45,30,70,42,36,48,34,60



39. Find the mean deviation about the mean of

the following data:



