doubtnut
India's Number 1 Education App

MATHS

BOOKS - UNITED BOOK HOUSE

HIGHER SECONDARY QUESTION 2019

Exercise

1. CHOOSE the correct answer from the following alternative :A coin is tossed 10 times. The probability of getting head 6times is

A. ${}^{10}C_5 . \frac{1}{2^{10}}$

B. ${}^{10}C_3 . \frac{1}{2^{10}}$

C. ${}^{10}C_4 . \frac{1}{2^{10}}$

D. ${}^{10}C_8 . \frac{1}{2^{10}}$

Answer:

Watch Video Solution

2. CHOOSE the correct answer from the following alternative : the rate of incrse of a side of a square is 1cm/sec. the rate of increase of area of the square, when length os a side of the square is 2 cm , is -

A. $\frac{4cm^2}{\sec}$

B. $\frac{8cm^2}{\sec}$

C. $\frac{1cm^2}{\sec}$

D. $\frac{2cm^2}{\sec}$

Answer:

Watch Video Solution

3. CHOOSE the correct answer from the following alternative : the angles between the two planes x-y+2z=9 and 2x+y+z=7 is -

A. 30°

B. 40°

C. 80°

D. 60°

Answer:

Watch Video Solution

4. CHOOSE the correct answer from the following alternative :if two rows or two columns of a determinant are identical then value of the determinant is

A. 0

B. 2

C. -1

D. 1

Answer:

Watch Video Solution

5. CHOOSE the correct answer from the following alternative :$P(A)=\frac{3}{7}, P(B)=\frac{4}{7}$ and $P(A \cap B)=\frac{2}{9}$, then the value of P(A/B) is equal to-

A. $\frac{7}{18}$

B. $\frac{14}{27}$

C. $\frac{5}{18}$

D. 44443

Answer:

Watch Video Solution

6. CHOOSE the correct answer from the following alternative : the value of $\tan\left(\frac{\pi}{2}-\tan^{-1}\left(\frac{1}{3}\right)\right)$ is equal to-

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

B. 3

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

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

Answer:

Watch Video Solution

7. CHOOSE the correct answer from the following alternative :if f(x)=-f(-x), then the value of $\int_{-a}^{a} f(x)dx$ is equal to

A. 2a

B. a

C. a/2

D. 0

Answer:

Watch Video Solution

8. The value of λ for which the vectors $\overrightarrow{a} = \hat{i} + 3\hat{j} - \hat{k}$ and $\overrightarrow{b} = 2\hat{i} + 6\hat{j} + \lambda k$ are parallel is

A. 3

B. -6

C. -3

D. -2

Answer:

Watch Video Solution

Watch Video Solution

9. CHOOSE the correct answer from the following alternative : the domain for which the functions f(x)=$3x^2 - 2x$ and g(x)=3(3x-2) are equal, will be -

A. {1,2/3}

B. {1,3}

C. {2/3,3}

D. {2/3,0}

Answer:

Watch Video Solution

10. CHOOSE the correct answer from the following alternative :if y=$\tan^{-1}\frac{5-x}{1+5x}$, then the vlaue of dy/dx-

A. $-\frac{1}{1+x^2}$

B. $\frac{1}{1+x^2}$

C. 5

D. $\frac{5}{1+x^2}$

Answer:

Watch Video Solution

11. 1. (a) ANSWER any one question: 1. solve : $2\sin^{-1}x = \cos^{-1}x.$

Watch Video Solution

12. ANSWER any one question: 2. let A={1,2,3,}. Define a relation (on A) which is reflexive and symmetric but not transitive.

Watch Video Solution

13. (b) answer any one question:1. A= $\begin{bmatrix} 8 & 0 \\ 4 & -2 \end{bmatrix}$ and B= $\begin{bmatrix} 2 & -2 \\ -5 & 1 \end{bmatrix}$, find another matrix X where 2A+3X=5B.

Watch Video Solution

14. answer any one question : 2. if $\begin{bmatrix} 2 & 3 \\ 4 & 5 \end{bmatrix} = \begin{bmatrix} x & 3 \\ 2x & 5 \end{bmatrix}$, find the value of x.

Watch Video Solution

15. (c)answer any three questions: 1. if $y=\sin^{-1}\left(\frac{2x}{1+x^2}\right)$, find dy/dx.

Watch Video Solution

16. answer any three questions :2. f(x)=5 -|x-1|: find the maximum value of f(x), also find the value of x for which f(x) is maximum.

Watch Video Solution

17. answer any three questions: 3.if x>0, then show that log(1+x) > x/(1+x).

Watch Video Solution

18. Find the differential equation of all circles which touch the x-axis at the origin.

Watch Video Solution

19. answer any three questions:5. if f(2)=4,f'(2)=4, then evaluate $\lim_{x \to 2} \frac{xf(2) - 2f(x)}{x - 2}$

Watch Video Solution

20. answer any three questions:6. evaluate :

$$\int_1^2 \frac{xdx}{(x+1)(x+2)}$$

Watch Video Solution

21. show that A(2,3,-4),B (1,-2,3) and C(3,8,-11) are collinear.

Watch Video Solution

22. if $\vec{a} = 5\hat{i} - \hat{j} - 3\hat{k}$ and $\vec{b} = \hat{i} + 3\hat{j} - 5\hat{k}$, Find $\vec{a}$. $\vec{b}$ =?

Watch Video Solution

23. (e)ANSWER ANY one question : 1. if P(A) =a and P(B)=b, then show that P(A/B) $\leq$ a/b

Watch Video Solution

24. if a and b are any two constants, then prove that $Var(aX+b) = a^2 Var(X)$.

Watch Video Solution

25.

if $\tan^{-1} x + \tan^{-1} y + \tan^{-1} z = \frac{\pi}{2}$ and $x + y + z = \sqrt{3}$

, then show that x=y=z.

Watch Video Solution

26. (b) answer the following questions: 1. if $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 1 & 2 \\ 2 & 2 & 1 \end{bmatrix}$, then show that $A^2 - 4A - 5I_3 = 0$

A.

B.

C.

D.

Answer:

Watch Video Solution

27. if $AB = \begin{bmatrix} i & -i \\ -i & i \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$, then show that $A^8 = 128B$

Watch Video Solution

28. Answer the foll. Question : 2.show that $\begin{vmatrix} 1+a & 1 & 1 \\ 1 & 1+b & 1 \\ 1 & 1 & 1+c \end{vmatrix} = abc\left(1 + \frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right), (abc \neq 0)$

Watch Video Solution

29. if cos y=x cos (a+y), $(a \neq 0)$, then show that $\frac{dy}{dx} = \frac{\cos^2(a+y)}{\sin a}$

Watch Video Solution

30. answer the foll. Questions 2. evaluate : $\int \sqrt{1+\sec x}dx.$

Watch Video Solution

31. or, evaluate : $\int \frac{dx}{(x-1)+\sqrt{x^2-1}}$

Watch Video Solution

32. answer the foll. Questions 3. solve : $(e^x+1)ydy-\left(y^2+1\right)e^x dx=0$, given x=0 , y=0.

Watch Video Solution

33. (d) answer ANY one question :1. $\bar{a}, \bar{b}$ and $\bar{c}$be three vectors such that $\bar{a}+\bar{b}+\bar{c}=0$ and $|\bar{a}|=1,|\bar{b}|=4,|\bar{c}|=2$. Evlautae $\bar{a}.\ \bar{b}+\bar{b}.\ \bar{c}+\bar{c}.\ \bar{a}.$

Watch Video Solution

34. answer any one question 2. if sum of two unit vectors be a unit vector , then show that diff. of those two vwctros is $\sqrt{3}.$

Watch Video Solution

35. (e)answer any one question : 1. using integral calculus , find the area of $\frac{x^2}{2}+\frac{y^2}{1}=1.$

Watch Video Solution

36. answer any one question 2. prove that $\int_1^3 \frac{dx}{x^2(x+1)} = \frac{2}{3} + \log\left(\frac{2}{3}\right)$

Watch Video Solution

37. answer any one question : 2.eight unbiased coins tossed .

Find the probability of getting exactly five heads

Watch Video Solution

38. answer any two questions :2.solve $\left(1+x^2\right)$dy+2xy dx=cot x dx.

Watch Video Solution

Watch Video Solution

39. answer any two questions 4. evaluate : $\lim_{n \to \infty} \left[\frac{n}{n^2 + 1^2} + \frac{n}{n^2 + 2^2} + \ldots + \frac{1}{2n} \right]$.

Watch Video Solution

40. ©answer any one question : 1.find the equation of the plane which passes thrpugh (-2,1,3) and also through the intersection of the planes 2x-7y+4z =0 and 3x-5y+4z+11=0

Watch Video Solution