



MATHS

BOOKS - MTG MATHS (BENGALI ENGLISH)

QUESTION PAPER 2007

Multiple Choice Questions

1. If lpha is a complex number such that $lpha^2+lpha+1=0$, then the value of $lpha^{61}$ is

A. 1

B.-1

 $\mathsf{C}.\,\alpha$

 $\mathsf{D.}-\alpha$



2. 12 balls are kept in 3 different pots. The probability that the pot

contains 3 balls in

A.
$$\frac{2^{t}}{3^{11}}$$

B. $\frac{12e_{1}+2^{12}}{3^{12}}$
C. $\frac{12e_{1}+2^{t}}{3^{12}}$
D. $\frac{1}{4}$

Answer:

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3. The system of equations

ax + y + z = 0-x + ay + z = 0-x + ay + z = 0-x - y + az = 0

has a non - zero solution if the real value a is

A. 1

 $\mathsf{B.}-1$

C. 3

D. 0

Answer:

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4. The positive integer which exactly divides the number $(3 imes 5^{2n+1}+2n^{3n+1})$ for all narepsilon N is

A. 17

B. 19

C. 21

D. 23

Answer:

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5. If two events A and B are such that $P(A^c)=0.3,\,P(B)=0.4$

and $P(A \cap B^c) = 0.5$, then $P(B \mid A \cup B^c)$ is

A. 0.9

 $B.\,0.25$

 $\mathsf{C}.\,0.5$

D. 0.8

Answer:



6. Amplitude of
$$\frac{1-i}{1+i}$$
 is

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

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

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

D.
$$\frac{\pi}{6}$$

Answer:



7. The domain of definition of the function $f(x) = \sin^{-1}(|x - 1| - 2)$ is A. $[-2, 0] \cup [2, 4]$ B. $[-2, 0] \cup [1, 3]$ C. $[-2, 0] \cup (2, 4)$ D. $(2, 0) \cup (2, 4)$

Answer:



8. Sum of the last 24 coefficient, in the expansion of $\left(1+x
ight)^{47}$,

when expanded in ascending powers of x is

 $\mathsf{A.}\,2^{46}$

 $B.2^{23}$

 $C. 2^{24}$

 $\mathsf{D.}\,2^{47}$

Answer:

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9. Let lpha, eta be the roots of $x^2+(3-\lambda)x-\lambda=0.$ The value of λ for which $lpha^2+eta^2$ is minimum is

A. 1

B. 3

C. 2

D. 0



10. The line $y = \sqrt{3}x$ bisects the angle between the lines $ax^2 + 2axy + y^2 = 0$ if a is equal to

A. $2 - \sqrt{3}$ B. $2 + \sqrt{3}$ C. $2\sqrt{3} + 3$ D. $2\sqrt{3} - 3$

Answer:

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11. The eccentricity of an ellipse, the length of whose minor axis is equal to the distance between the foci, is

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

B. $\frac{1}{3}$
C. $\frac{1}{\sqrt{3}}$
D. $\frac{1}{\sqrt{2}}$

Answer:



12. The equation of a tangent to the hyperbola $x^2 - 2y^2 = 2$ parallel to the line 2x - 2y + 5 = 0 is

A. y = 2x + 1

B. y = 2x - 1

 $\mathsf{C}.\, y = x \pm 1$

D. x + y + 1 = 0

Answer:



13. Let f(x) = x, |x|. The set of points where f (x) is twice differentiable is

A. $orall x \in R$

- B. $\forall x \in R (0)$
- C. $\forall x \in R (0, 1)$

D. $orall x \in R-(1)$

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14. If f(x+y) = f(x) + f(y) for all real x and y and if f (x) is

continuous at $x=\sqrt{3}$, then

A. f (x) is not continuous at $x=~-\sqrt{3}$

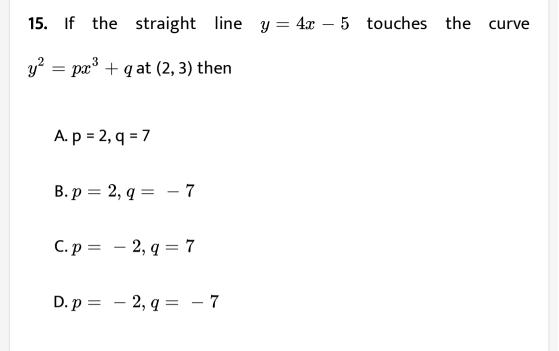
B. f (x) is everywhere continuous except at $x=-\sqrt{3}$

C. f(x) is not continuous at x = 0

D. f (x) is continuous for all real x

Answer:

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16. If A and B are square matrices of the same order, then AB = 0

implies

A. both A and B are non - singular

B. A is non - singular and B is singular

C. A is singular and B is non - singular

D. either A = 0 or B = 0 or both A and B are singular matrices

Answer:



17. If the sum of the roots of the equation $2x^2 + 4x + C = 0$ be equal to the sum of their square then

A. C = 2

 $\mathsf{B.}\, C=\,-\,6$

C. C = 4

D. C = 6

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18. If in an arithmetic progression, the sum of n terms is equal to the sum of r terms then the sum of (n+r) terms is

А. n + rВ. -1С. 1

D. 0

Answer:

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19. If $f(x)=x(x-1)(x-2), 0\leq x\leq 4$, then the point ξ

which satisfies Mean Value Theorem satisfies

A.
$$0 < \xi < 1$$

B. $\xi > 3$
C. $0 < \xi < \frac{1}{2}$
D. $1 < \xi < 3$

Answer:



20. If
$$\log_a x = y$$
, then the value of $\log_a\!\left(rac{a}{x}
ight)$ is

A. 1 - y

B.1 + y

С. у

D. - y

Answer:

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21. The sides of the rectangle of the greatest area that can be inscribed in the ellipse $x^2 + 2y^2 = 8$ are given by

A. 4, $2\sqrt{2}$ B. 2, $4\sqrt{2}$ C. $\sqrt{2}$, 4 D. $2\sqrt{3}$, 4

Answer:

22. The polar co-ordinates of the point $ig(-\sqrt{3},1ig)$ are

A.
$$\left(2, \frac{5\pi}{6}\right)$$

B. $\left(2, \frac{3\pi}{6}\right)$
C. $\left(2, \frac{-5\pi}{6}\right)$
D. $\left(2, \frac{-3\pi}{6}\right)$

Answer:

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23. If two sides of a triangle are $2\sqrt{3}-2$ and $2\sqrt{3}+2$ and their

included angle is $60^{\,\circ}$, then the other angles are

A. $75^\circ, 45^\circ$

B. $105^\circ, 15^\circ$

 $\mathsf{C.}\,60^\circ\,,\,60^\circ$

D. 90° , 30°

Answer:

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24. The solution of the equation $\frac{dy}{dx} = xy + y$ subject to the conditions, y = 1, at x = 1, is

A.
$$\left(e^{x+R1/2}
ight)e^{3/2}$$

B. $\left(e^{2x}+x^2
ight)e^{1/3}$
C. $\left(e^{x/2}+x^3
ight)e^{1/2}$
D. $\left(e^{2z+x/2}
ight)e^{2/3}$



25. An integrating factor of the differential equation $\frac{dy}{dx}(x \log x) + 2y = \log x \text{ is}$ A. $(\log x)^2$ B. x^2 C. $\log x$ D. $\frac{1}{\log x}$ Answer:

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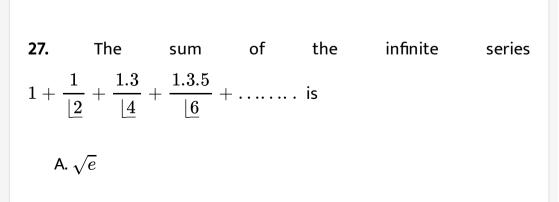
26. Which one of the following is incorrect for any two events A and B ?

A.
$$P(A \cap B) \geq P(A) + P(B) - 1$$

B. $P(A \cap B) \leq P(A)$
C. $P(A^c \cap B^c) = 1 - P(A \cap B)$
D. $P(A) \leq P(A \cup B)$

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Answer:



B.
$$rac{3}{2}e$$

C. e^2-e
D. $2e+1$



28. Two mappings $f \colon R \to R$ and $g \colon R \to R$ are defined in the

following ways :

 $f(x) = \left\{egin{array}{c} 0 ext{ when x is rational} \ 1 ext{ where x is irrational} \end{array}, g(x) = \left\{egin{array}{c} -1 ext{ when x is rational} \ 0 ext{ when x is irrational} \end{array}
ight.$

then the value of $(gof)(e) + (fog)(\pi)$ is

A. - 1

,

C. 0

D. 2

Answer:

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29. If the arithmetic mean of the roots of $x^2 - 2ax + b = 0$ is A and the geometric mean of the roots of $x^2 - 2bx + a^2 = 0$ is G, then

A. A = G

 $\mathsf{B.}\, A > G$

 $\mathsf{C}.\,G>A$

D.
$$AG=a^2+b^2$$

Answer:



30. Let $y = a(1 - \cos \theta), x = a(\theta - \sin \theta)$. Then y regarded as a

function of x is maximum when θ equals

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

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

Answer:

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31. Let $I=\int_{-2}^{+2} \{x-[x]\}dx$ when [x] represents the greatest

integer not greater than x. Then the value of I is

A. 4		
B. 2		
C. 3		
D. 1		

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32. A particle moves according to the law $s=t^3-9t^2+24t$. The

distance covered by the particle before it first comes to rest is -

A. 10 units

B. 16 units

C. 20 units

D. 24 units

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33. The value of
$$\int \frac{1}{e^x + e^{-x}} dx$$
 is

- A. $\tan^{-1} e^x$
- $\mathsf{B}.\tan^{-1}e^{2x}$
- $\mathsf{C.}\logig(e^x+e^{-x}ig)$
- D. $e^x e^{-x}$

Answer:

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34. If
$$f'(2)=1$$
, then $\lim_{h
ightarrow 0}rac{f(2+h)-f(2-h)}{2h}$ is equal to

A. 0

B. 1

C. 2

 $\mathsf{D}.\,\frac{1}{2}$

Answer:



35. Two fair dice are thrown. The probability that the sum of the numbers on the upper face is 5, is

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

B. $\frac{1}{18}$
C. $\frac{1}{9}$
D. $\frac{4}{9}$



36. The sum of all the coefficients in the expansion of $\left(x^2 + \frac{1}{x}\right)^n$ is 1024. The value of n is A. 12

B. 8

C. 14

D. 10

Answer:

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37. The domain of definition of the function

$$f(x) = \sin^{-1}(|x - 1| - 2)$$
 is
A. $[-2, 0] \cup [1, 3]$
B. $[-2, 0] \cup [1, 4]$
C. $[-2, 0] \cup [2, 4]$
D. $[-2, 0] \cup [1, 2]$

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38. Using calculus, find the area bounded by the curve |x|+|y|=1.

C. 6

D. 8

Answer:

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39. The number of tangents that can be drawn from the point (6,

2) on the hyperbola
$$rac{x^2}{9}-rac{y^2}{4}=1$$
 is

A. 0

B. 1

C. 2

D. 4

Answer:



40. The value of the integral
$$\int_1^e (\log x)^2 dx$$
 is

A. e

B. 2e

C. e - 1

D.e-2

Answer:

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41. The value of
$$\sum\limits_{r=1}^5 \left(i^r-i^{r+1}
ight)$$
 is, where $i=\sqrt{-1}$

A. i - 1

B.3i + 3

 $\mathsf{C.}\,5i-5$

 $\mathsf{D}.\,i+1$

Answer:

42. If (m, n) represent respectively the order and degree of the differntial equation $\frac{d^2y}{dx^2} + 3\left(\frac{dy}{dx}\right)^2 = \log\left(\frac{d^2y}{dx^2}\right)$ then (m, n) =

A. (2, 2)

.....

B. (2, 1)

C. (1, 2)

D. (2, undefined)



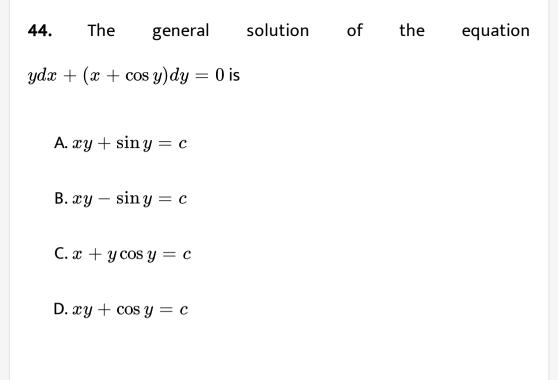
43. The solution of the differential euation $rac{dy}{dx} = rac{x-y}{x+y}$ is

C is integration constant.

A. $x^2 - y^2 + 2xy + C = 0$ B. $x^2 - y^2 + xy + C = 0$ C. $x^2 - y^2 + xy + C = 0$ D. $x^2 - y^2 - 2xy + C = 0$

Answer:

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45. The letters of the word 'TRIANGLE' are arranged in a row in all possible ways. How many of them begin with A and end with N ?

B. 720

C. 1680

D. 60

Answer:



46. If in an infinite G.P. series, the first term is 'a' and the sum is 3, then 'a' must satisfy

A. a < -1

 $\mathsf{B.}\,a>9$

 $\mathsf{C}.\, 0 < a < 3$

D. - 6 < a < 0



47. If n is an integer greater than 1, then the value of $a - {}^{n}c_{1}(a - 1) + {}^{n}c_{2}(a - 2) + \dots + (-1)^{n}(a - n)$ is A. a^{n} B. $(-a)^{n}$ C. O D. 1

Answer:

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48. $y = f(x) = x^2 - x + 10$ is

A. an increasing function in
$$\left(\frac{1}{2}, \alpha\right)$$

B. an increasing function in $\left[-\frac{1}{3}, \frac{2}{3}\right]$
C. an increasing function in $\left[\frac{2}{3}, \alpha\right]$
D. a decreasing function in $\left[\frac{1}{3}, \alpha\right]$

Answer:

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49. If $f(x) = \mu x - \sin x$ is strictly increasing then

A. $\mu > -1$

B. $\mu < 1$

 $\mathsf{C}.\,\mu>1$

 $\mathsf{D.}\,\mu<~-1$

Answer:

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50. If A and B are two square matrices of the same order such that AB = A, BA = B and if a matrix A is called idempotent if $A^2 = A$, then

A. A is idempotent but not B

B. B is idempotent but not A

C. neither A nor B is idempotent

D. both A and B are idempotent

51. If x and a are real, then the value of a for which the expression

$$x^2-rac{3a}{2}x+1-a^2$$
 is positive, is
A. $a>-rac{4}{25}$
B. $a<rac{4}{25}$
C. $|a|>rac{4}{5}$
D. $|a|<rac{4}{5}$

Answer:



52. The differential equation of the family of parabolas whose vertex is at (1, 2) and axis is parallel to x - axis is

A.
$$2rac{dy}{dx}(x-1)=y-2$$

B. $xrac{dy}{dx}=y-2$
C. $\left(rac{dy}{dx}
ight)^2-3xy=0$
D. $rac{dy}{dx}(x-1)=y-2$



53. The solution of
$$\frac{dy}{dx} = xy + 2y$$
 subject to the condition y = 1 at x = 1 is

A.
$$y = \left[e^{2x + x^2/2}\right]e^{-2}$$

B. $y = \left[e^{2x} + x^2/2\right]e^{-3/2}$
C. $y = \left[e^{2x + x^2/2}\right]e^{-2/3}$
D. $y = \left[e^{2x + x^2/2}\right]e^{-5/2}$

Answer:
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54. The sum of the first 26 odd positive integers is
A. 26^1
$B.26^3$
$C.26^4$
D. 26^2
Answer:
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55. If Z_1 and Z_2 are two non-zero complex numbers such that $|Z_1+Z_2|=|Z_1|+|Z_2|$, then arg Z_1- arg Z_2 is

A. 0

B.
$$-rac{\pi}{2}$$
C. $rac{\pi}{2}$

D. 1

Answer:



56. The solution of
$$rac{d^2y}{dx^2} - 4rac{dy}{dx} = 0$$
 is

A.
$$y=A+Be^{4x}$$

 $\mathsf{B.}\, y = A\cos 2x + B\sin 2x$

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

D.
$$y = Ae^{2x} + Be^{-2x}$$

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57. If the coefficients of 2nd, 3rd and 4th terms of $\left(1+x
ight)^{2n}$ are in

A.P., then n equals

A.
$$\frac{7}{2}$$

B. $\frac{11}{2}$
C. $\frac{5}{2}$
D. 3

58. A particle is projected vertically upwards with a velocity of 4900 cm/sec. The distance traversed in the last second by the particle during its ascent $\left(g=980cm/\sec^2\right)$ is

A. 490 cm

B. 940 cm

C. 980 cm

D. 400 cm

Answer:



59. The value of $\sin(~-300^{\,\circ})$ is

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

B. $\frac{\sqrt{3}}{2}$
C. $\sqrt{3}$
D. $\frac{1}{\sqrt{2}}$



60. The solution of the differential equation $rac{dy}{dx}=e^{x-y}+1$ is

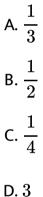
A.
$$e^{x-y} = x+c$$

B. $e^{y-x} = x+c$
C. $e^{x-y} = y+c$
D. $e^{y-x} = y+c$



61. The area of the region bounded by the curves $y=x^2$ and





ט.ט

Answer:

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62. If $f(x)=|x|+|1-x|,\ -2\leq x\leq 3$, then the set of points

of discontinuity of f (x) is

A. $\{0, 1\}$

B. {1}

 $\mathsf{C}.\,\{0,\,1,\,2,\,3\}$

D. $\{-1, 0, 1, 2, 3\}$

Answer:

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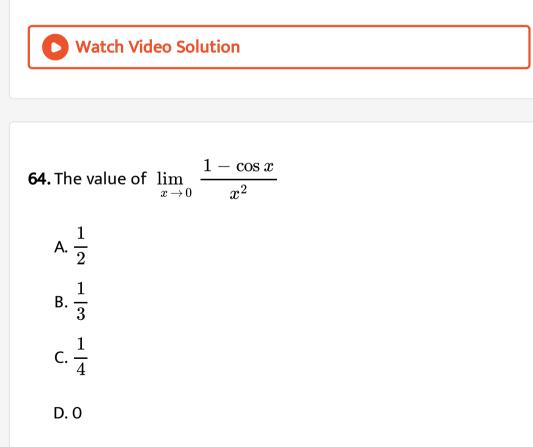
63. Two cars start moving from the junction point of two perpendicular roads with velocity 30 km/h and 40 km/h. The rate at which thay are separating is

A. 35 km/h

B. 30 km/h

C. 10 km/h

D. 50 km/h



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65. If
$$A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$$
 then A^{-1} is
A. $-\frac{1}{9}A$
B. $\frac{1}{9}A$
C. $\frac{1}{19}A$
D. $-\frac{1}{19}A$



66. The value of x, for which $\log_3(5.3^{x-1}+1), \log_9(3^{1-x}+1)$ and 1 are in A.P. is

A.
$$\log_3 \frac{5}{3}$$

B. $\log_3 \frac{3}{5}$
C. $\log_3 \frac{3}{2}$
D. $\log_3 \frac{2}{5}$

Answer:

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67. A point moves in such a manner that the sum of the squares of the distances from it to the points (a, 0) and (-a, 0) is $2b^2$. The locus of the point is

A.
$$x^2 + y^2 = b^2 + a^2$$

B. $x^2 + y^2 = b^2 - a^2$
C. $x^2 - y^2 = b^2 - a^2$
D. $x^2 - y^2 = b^2 + a^2$

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68. If the roots of the equation $x^2 + lpha^2 = 8x + 6lpha$ are real, then

which one is correct ?

A.
$$-2 \leq lpha \leq 8$$

B. $2 \leq lpha \leq 8$
C. $-2 < lpha \leq 8$
D. $-2 \leq lpha < 8$



69. If two circles
$$x^2 + y^2 + 2gx + 2fy = 0$$
 and
 $x^2 + y^2 + 2g'x + 2f'y = 0$ touch each then
A. $ff' = gg'$
B. $fg' = f'g$
C. $f^2 + f'^2 = g^2 + g'^2$
D. $f^2 + g^2 = f'^2 + g'^2$

Answer:

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70. The point on the curve $y^2=x$, the tangent at which makes an

angle $45^{\,\circ}$ with the x-axis, is

A. (0, 0) B. $\frac{1}{2}, \frac{1}{4}$ C. $\frac{1}{4}, \frac{1}{2}$

D. (2, 4)

Answer:



71.
$$\lim_{x
ightarrow\infty}~\left(1+rac{1}{x}
ight)^{x\,/\,2}$$
 is equal to

A. e

B. e^{-1}

 $\mathsf{C.}\,e^2$

D. $e^{1/2}$

Answer:

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72. The value of
$$\lim_{n o \infty} \left[rac{n!}{n^n}
ight]^{rac{1}{n}}$$
 is equal to -

A.
$$(n+1)$$
 ! $imes$ $\left({^{2n}C_n}
ight)$

$$\mathsf{B}.\,n!\times \left({^{2n}C_n} \right)$$

C.
$$n! imes ig(^{2n+1}C_nig)$$

D.
$$n! imes \left({^{2n+1}C_{n+1}}
ight)$$



73. If
$$y = \frac{1}{1 + x + x^2 + x^3}$$
, then the value of $\frac{d^2y}{dx^2}$ at $x = 0$ is -
A. $\frac{9}{4}$
B. $-\frac{9}{4}$
C. $\frac{9}{8}$
D. $-\frac{9}{8}$

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74. Three integers form an increasing G.P. If the third number is decreased by 16, we get an A.P. If then the second number is decreased by 2, we again get a G.P. The smallest number of the original G.P. is

A.	3
В.	1
C.	5

D. 7

Answer:

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75. The probability that 3 students can solve a mathematics problem independently is $\frac{1}{3}$, $\frac{1}{4}$ and $\frac{1}{5}$ respectively. The chance that the problem is solved is

A.
$$\frac{1}{5}$$

B. $\frac{2}{5}$
C. $\frac{3}{5}$

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76. The sum of first n terms of a series is $3^n(a + b)$ when a, b are constants. Then the terms of the series are in

A. A.P.

B. G.P.

C. A.P. from the second term onwards

D. G.P. from the second term onwards



77. A and B are subsets of the universal set \cup such that $n(\cup) = 800, n(A) = 300, n(B) = 400$ and $n(A \cap B) = 100$. The number of elements in the set $A^c \cap B^c$ is equal to

A. 100

B. 200

C. 300

D. 400

Answer:

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78. If $x^2 + y^2 = 1$, the minimum and maximum values of x + y

are

A.
$$-\sqrt{2}, \sqrt{2}$$

B. $-1, 1$
C. $-\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}$
D. $-\frac{1}{\sqrt{2}}, 2$



79. Let $f(x) = a^x(a > 0)$ be written as f(x) = g(x) + h(x), when g (x) is an even function and h (x) is an odd function. Then the value of g(x + y) + g(x - y) is

A.
$$2g(x)h(y)$$

B. $2g(x+y)g(x-y)$
C. $2g(x)$

 $\mathsf{D}.\,g(x)h(x)$

Answer:

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80.
$$A = egin{bmatrix} -i & 0 \ 0 & i \end{bmatrix}$$
 then $A^T A =$

(where I is 2 imes 2 identity matrix)

A. I

 $\mathsf{B.}-I$

- C. A
- $\mathsf{D}.-A$

Answer:

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81. Show that ,the maximum value of $\left(rac{1}{x}
ight)^x$ is $e^{rac{1}{e}}$

A. e^{e} B. e^{-e} C. $-e^{e}$

D. $e^{1/2}$

Answer:

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82. The value of the integeral
$$\int_{-\pi/7}^{\pi/7} x^3 \cos^2 x dx$$
 is

A. 0

 $\mathsf{B}.\,\frac{\pi}{4}$

C. 1

D. - 1

Answer:

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83. The sum of the series
$$1 + \frac{1}{3.9} + \frac{1}{5.81} + \frac{1}{7.729} + \dots$$
 to

 ∞ is

A.
$$\frac{2}{3}\log_e \frac{3}{2}$$

B. $\frac{2}{3}\log_{10} \frac{3}{2}$
C. $\frac{3}{2}\log_e 2$
D. $\frac{3}{2}\log_e 3$

84. Using integration find the area of the region bounded by the parabola $y^2 = 16x$ and the line x = 4

A. 12

B. 16

- C. 3
- D. 6

Answer:



85. If m and n denote respectively the order and degree of a differential equation, then for the equation

$$\left[a+\left(rac{dy}{dx}
ight)^n
ight]^{rac{7}{3}}=brac{d^2y}{dx^2}$$
, the value of (m,n) will be

A. (1, 7)

B. (1, 6)

C. (2, 5)

D. (2, 6)

Answer:

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86. A particle is moving along the x - axis in such a way that it has displacement $s = 3t^3 - 2t^2$ at time t. The interval of time for which the particle remains in the negative x-axis is given by

A.
$$0 < t < rac{2}{3}$$

B. $0 < t < rac{3}{2}$

$$\mathsf{C}.\,\frac{1}{2} < t < 1$$

 ${\sf D}.\, 0 < t < 1$

Answer:

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87. The identity mapping $I_c\colon S o S$ is defined as $I_s(x)=x$ for $x\in S.$ Suppose $f\colon A o B$ is a bijection, then which one of the following is true ?

A. $f^{\,-1}0f
eq I_A$ but $f0f^{\,-1}=I_B$

B. $f^{-1}0f = I_A$ but $f0f^{-1} = I_B$

C. $f^{-1}0f=I_A$ but $f0f^{-1}
eq I_B$

D. $f^{-1}0f \neq I_A$ and $f0f^{-1} \neq I_B$



88. If
$$z = x + iy$$
 and arg $\left(\frac{z-1}{z+1}\right) = \frac{\pi}{4}$, then the locus of (x,y) is

A. an ellipse

B. straight line

C. a circle with centre (0, 1)

D. a circle with centre (1, 0)



89. Solve the equation
$$rac{dy}{dx}+rac{y}{x}=x^2$$

A.
$$\displaystyle rac{d^2y}{dx^2}=8y$$

B. $\displaystyle rac{d^2y}{dx^2}=16y$
C. $\displaystyle rac{d^2y}{dx^2}=y$
D. $\displaystyle rac{d^2y}{dx^2}=4y$



90. A particle is moving in a straight line such that its velocity at time t is proportional to t^5 . Then its acceleration is proportional to

A. t^4 B. t^5 C. $\frac{1}{t^5}$

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91. For an integrable function f (x) in [-3, 3], which of the following is correct ? $\int_3^3 f(x) dx = 0$ when f (x) is

A. an odd function

B. an even function

C. only a trigonometric function

D. any function



92. The area bounded by the parabola $y^2=2x+1$ and the line

x-y=1 is

A.
$$\frac{16}{3}$$

B. $\frac{8}{3}$
C. $\frac{24}{5}$
D. $\frac{18}{4}$



93. If the circles
$$x^2 + y^2 - 4rx - 2ry + 4r^2 = 0$$
 and $x^2 + y^2 = 25$ touch each other, then r satisfies

A.
$$4r^2+10r\pm 25=0$$

B.
$$5r^2 + 10r \pm 16 = 0$$

C.
$$4r^2 \pm 10r + 25 = 0$$

D.
$$4r^2\pm 10r-25=0$$



94. The minimum value of $6\coslpha+8\sinlpha+11$ is

- A. 0
- B. 1
- C. 2
- $\mathsf{D}.\,\frac{1}{2}$



95. If lpha, eta be the roots of the equation $x^2+x+1=0$, the value of $lpha^4eta^4-lpha^{-1}eta^{-1}$ is

 $\mathsf{A.}-1$

B. 1

C. 0

D. 2

Answer:



96. If $A = \begin{bmatrix} 0 & 3 \\ 4 & 5 \end{bmatrix}$ and $kA = \begin{bmatrix} 0 & 4a \\ 3b & 60 \end{bmatrix}$, then the values of k, a

and b are respectively

A. 12, 9, 16

B. 9, 12, 16

C. 12, 9, 15

D. 16, 9, 12

Answer:



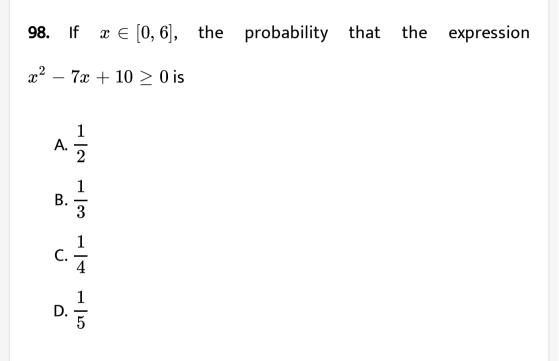
97. Let $f(x)=rac{ax}{x+1}, x
eq 1$, then the value of 'a' for which f[f(x)]=x is

A. $\sqrt{2}$ B. $-\sqrt{2}$

C. 1

 $\mathsf{D.}-1$





Answer:

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99. Let f(x+y)=f(x)f(y) $orall x,\ \in IR,$ f(6)=5 and f'(0)=1

. Then the value of f' (6) is

A. 5

B. 30

 $\mathsf{C}.\,\frac{5}{2}$

D. 36

Answer:

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100. If the ratio of the sides of a triangle is 4 : 5 : 7, then the triangle must be

A. right - angled

B. actute - angled

C. obtuse - angled

D. right - angled and isosceles

