MATHS

BOOKS - PATHFINDER MATHS (BENGALI ENGLISH)

BASIC MATHEMATICS

Question Bank

1. If A = {a,b,c} and B= {b,c,d} then evaluate $A \cup B$, $A \cap B$, $A - B$ and B-A

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2. Consider the number, N 5768PO2Q

If P = 2 and the number N is divisible by 3, them find number of possible values of Q.

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3. Consider the number, N 5768P02Q

If N is divisible by 4, them find the ordered pairs of (P,Q).

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4. Consider the number, N 5768P02Q

If N is divisible by both 8 and 9 , then find the number of possible ordered pairs of (P,Q).

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5. solve the inequality f(x)=$\frac{(x-2)^{1000}(x+1)^{235}\left(x-\frac{1}{2}\right)^{971}(x+8)^{4}}{x^{500}(x-3)^{75}(x+2)^{93}}$

where $f(x) \geq 0$,

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6. Solve:

$(x-1)(3-x)(x+5) \geq 0$

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7. Solve:

$(x-1)(3-x)(x+5) \geq 0$

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8. Solve :

$$\frac{(x-1)^2(x-2)^3(x-4)}{(x+1)(x+3)^4} \geq 0$$

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9. Find the solution set of 'x' to $\left(\sin x - \frac{1}{2}\right)(x-2)\left(\tan x - \sqrt{3}\right) \geq 0$ for $x \in [0, 2x]$

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10. Solve the equation :

$$\sqrt[5]{\left[\frac{3}{x+1}+\frac{7}{x+2}\right]}<\sqrt[5]{\frac{6}{x-1}}$$

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11. Find the value of $\log_2\sqrt{128}$

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12. Evaluate :

$$7\log\frac{16}{15}+5\log\frac{25}{24}+3\log\frac{81}{80}$$

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13. If a^2+b^2=7ab, then prove that $\log\left(\frac{a+b}{3}\right)=\frac{1}{2}(\log a+\log b)$

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14. Without using any table determine the bigger of $\log_{\frac{1}{2}} 3$ and $\log_{\frac{1}{2}} 2$

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15. Solve for x : $\log_{\frac{1}{3}}(1-x) \geq 0$

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16. Solve $\log_{1/2}\left(x^2 - 5x + 7\right) \geq 0$

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17. Solve :

$\log_{1/2} x \geq \log_{1/3} x$

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18. Show that $\log_2 3$is not a rational number.

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19. In a right-angled triangle, a and b are the lengths of sides and c is the length of hypotenuse such that $c - b \neq 1, c + b \neq 1$. Show that

$\log_{c+b} a + \log_{c-b} a = 2\log_{c+b} a.\ \log_{c-b} a$

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20. Find the value of x satisfying

$\log_a\left(1 + \log_b\left\{1 + \log_c\left(1 + \log_p x\right)\right\}\right) = 0$

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21. Solve for 'x'

$$9^{\log_3(\log_2 x)} = \log_2 x - (\log_2 x)^2 + 1$$

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22. If a,b,c be three distinct positive numbers, each different from 1 such that

$$(\log_b a \log_c a - \log_a a) + (\log_a b \log_c b - \log_b b) + (\log_a c \log_b c - \log_c c) = 0,$$

then prove that abc=1

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23. Solve the inequation :

$$\sqrt[5]{\left[\frac{3}{x+1} + \frac{7}{x+2}\right]} < \sqrt[5]{\frac{6}{x-1}}$$

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24. If $\log_{0.3}(x-1) < \log_{0.09}(x-1)$, then find the interval in which x will lie.

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25. Solve for 'x' :

$|x-3| < 2$

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26. Solve for 'x' :

$|x-3| > 2$

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27. Solve for 'x' :

$1 < |x-2| < 3$

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28. Solve for 'x' :

$|x-1|+|2x-3|=|3x-4|$

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29. Solve : $|x+3|>|2x-1|$

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30. Solve : $\left|x^2+3x\right|+x^2-2\geq 0$

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31. Solve : $|x-1|+|x-2|=6$

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32. Prove that

$2\left(\sin^6\theta+\cos^6\theta\right)-3\left(\sin^4\theta+\cos^4\theta\right)+1=0$

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33. Show that :

$3(\sin x-\cos x)^4+6(\sin x+\cos x)^2+4\left(\sin^6 x-\cos^6 x\right)$ is independent of x

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34. If θ lies in the 2^{nd} quadrant and 3 tan θ +4=0, then find the value of 2 cot θ-5 cos θ + sin θ

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35. Find the value of tan 105°

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36. Prove that $\tan 70^\circ = \tan 20^\circ + 2\tan 50^\circ$

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37. If A + B = 45°, show that (1+tanA) (1+tanB) =2

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38. If cos 2x + 2 cosx = 1 then evaluate $\sin^2 x\left(2 - \cos^2 x\right)$

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39. Prove that

$\sqrt{3}\text{cosec}20^\circ - \sec 20^\circ = 4$

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40. Prove that : tan A + 2tan2A + 4 tan4A + 8cot8A =cotA

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41. Evaluate :

$\cos 12^\circ \cos 24^\circ \cos 36^\circ \cos 48^\circ \cos 72^\circ \cos 84^\circ$

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42. If

$\text{coses}\theta - \sin\theta = m, \sec\theta - \cos\theta = n, \text{eliminate}\theta$

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43. If $\cos(\alpha+\beta) = \frac{4}{5}$ and $\sin(\alpha-\beta) = \frac{5}{13}$ and α, β lie between 0 and $\frac{\pi}{4}$, $\alpha > \beta$, then, then find $\tan 2\alpha$

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44. If tan θ=cos θ, where $\theta \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$, find the number of solutions of the equation.

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45. Find the set of values of θ for which $\sin\theta > \cos\theta$,, where $\theta \in [0, 2\pi]$.

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46. Evaluate the following limits :

$$\lim_{x \to 0} \frac{\sqrt{1+x}-1}{x}$$

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47. Evaluate the following limits :

$$\lim_{x \to 0} \frac{\sin 3x + 7x}{4x + \sin 2x}$$

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48. Evaluate the following limits :

$$\lim_{x \to 0} \frac{1 - \cos x}{\left(e^{x^2} - 1\right)}$$

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49. Evaluate the following limits :

$$\lim_{x \to \frac{\pi}{2}} \left(\frac{\pi}{2} - x\right) \text{tanx}$$

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50. Evaluate the following limits :

$$\lim_{x \to 0} \left[\frac{\sqrt{1 + 2x} - \sqrt{1 - 2x}}{\sin x}\right]$$

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51. Evaluate the following limits :

$$\lim_{x \to 2} \frac{x^{\frac{7}{3}} - 2^{\frac{7}{3}}}{x - 2}$$

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52. $\lim_{x \to 0} \frac{1 - \cos x}{x^2} = ?$

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53. Find the derivative of the following w.r.t.x:

In $\sqrt{(x^2 + x + 1)}$

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54. Find the derivative of the following functions w.r.t.x:

cos (In x)

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55. Find the derivative of the following functions w.r.t.x:

$$\frac{e^{2x}}{Inx}$$

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56. Find the derivative of the following functions w.r.t.x:

$(\tan x)^x$

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57. Find the derivative of the following functions w.r.t.x:

$y = \sin 2x + e^{-3x} - \tan^{-1} 5x$

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58. Find the derivative of the following functions w.r.t.x:

$y = \log\left(1 + x^3\right)$

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59. Find the derivative of the following functions w.r.t.x:

$y = \frac{e^{4x}}{x^2}$

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60. Differentiate the following functions :

$\tan^{-1}\left(\ln\left(x^3 + 2x + 5\right)\right)$

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61. Differentiate the following functions :

$\text{cosec}^{-1}\left(e^{2\cos x}\right)$

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62. Differentiate the following functions :

$\left(\cos^{-1}(1-3x)\right)^2$

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63. Find $\frac{dy}{dx}$, when

$x = a\cos t + at, y = a\sin t - at$, where t is the parameter

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64. Find $\frac{dy}{dx}$, when

x log x + y log y + xy - 5x + 2y + 3 = 0

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65. Find $\frac{dy}{dx}$, when

$y = x^x + (\sin x)^{\cos x}$

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66. If the radius of a circle changes at a uniform rate of 2 cm/s, find the rate of change of area of the circle, at the instant when the radius is 20 cm.

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67. A particle is moving in a vertical line whose equation of motion is given by $s = 32 + 46t + 9t^2$ where 's' is measured in meters and 't' is measured in seconds. Find the velocity and acceleration of the particle at t=3 sec.

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68. Find the equation of the tangent and the normal at the point (0, -1) to the curve $5x^2 + 3y^2 + 2x + 4y + 1 = 0$

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69. For the function f(x) = $2x^3 - 8x^2 + 10x + 5$, find the interval (s) in which f(x) is increasing

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70. For the function f(x) = $2x^3 - 8x^2 + 10x + 5$, find the interval (s) in which f(x) is decreasing

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71. Investigate the increasing or decreasing behaviour of the following function :

$f(x) = \sin^3 x - 3\sin^2 x - 5, x \in \left(\frac{-\pi}{2}, \frac{\pi}{2}\right)$

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72. If $x > 0, y > 0$ and x+y=1, then find the minimum value of x log x + y log y.

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73. Evaluate the following integrals :

$\int x.\, e^x dx$

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74. Evaluate the following integrals :

$$\int \frac{e^{\tan^{-1} x}}{1+x^2} dx$$

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75. Evaluate the following integrals :

$$\int \sec x (\sec x + \tan x) dx$$

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76. Evaluate the following integrals :

$$\int_3^6 |x-4| dx$$

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77. Solve the following differential equations :

xdy+ydx=0,at x=1,y=1

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78. Solve the following differential equations :

$$\frac{dy}{dx} + \sqrt{\frac{1-y^2}{1-x^2}} = 0$$

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79. Solve the following differential equations :

$$\tan x \cdot \cos^2 y dx + \tan y \cdot \cos^2 x dy = 0$$

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80. Solve the following differential equations :

$$x\left(1+y^2\right)dx + y\left(1+x^2\right)dy = 0, at, x = 0, y = 1$$

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81. Let{x} and [x] denote the fractional and integral parts of a real number x respectively.Solve 4{x}=x+[x]

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82. If y = 2[x]+3 and y = 3[x-2]+5 and find [x+y]

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83. Solve $|[x] - 2x| = 4$

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84. Solve $(x)^2 + (x+1)^2 = 25$ {where (x) denotes the least integer function}

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85. If $0 < x < 1000$ and

$\left[\frac{x}{2}\right] + \left[\frac{x}{3}\right] + \left[\frac{x}{5}\right] = \frac{31}{30}x$, where [x] is the greatest interger less than or equal to x, the number of possible values of x is

A. 34

B. 32

C. 33

D. None of these

Answer:

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86. Resolve $\frac{x^2}{(x-1)(x-2)(x-3)}$ into partial fractions.

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87. Resolve $\frac{x^4 - x^2 + 1}{x^2(x^2+1)^2}$ into partial fractions.

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88. Resolve $\frac{2x^2 - 11x + 5}{(x-3)(x^2+2x+5)}$ into partial fractions.

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89. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

$A \cup B$

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90. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

$A \cap B$

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91. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

A - B

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92. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

$A \cap B$

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93. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

$\overline{A \cup B}$

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94. If A={a,b,c,d,e}:B={c,d,e,f,g} and S={a,b,c,d,e,f,g,h,i,j}. Then evaluate

$\overline{A \cap B}$

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95. If $A = \{a, b, c, d, e\} : B = \{c, d, e, f, g\}$ and $S = \{a, b, c, d, e, f, g, h, i, j\}$. Then evaluate $(A - B) \cup (B - A)$

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96. Find $A \cup B$, $A \cap B$,$A - B$ and $B - A$

If A=$\{x, x \in R\} : B = \{x, |x| \leq 3\}$

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97. In a set S contains n elements. Find the total no. of non void subjects of S.

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98. Consider a number N=21P53Q4 .Number of ordered pairs (P,Q) so that the number 'N' is divisible by 9, is

A. 11

B. 12

C. 10

D. 8

Answer: A

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99. Consider a number n=21P53Q4.Number of values of Q so that the number 'N' is divisible by 8, is

A. 4

B. 3

C. 2

D. 6

Answer: B

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100. Consider a number N=21P53Q4. Number of ordered pairs (P,Q) so that the number 'N' is divisible by 44, is

A. 2

B. 3

C. 4

D. 5

Answer: C

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101. If A and B are two rational number and AB, (A+B) and (A-B) are rational numbers, then (A/B) is (where B $\neq$ 0)

A. Always rational

B. Never retinol

C. Always irrational

D. Rational when $A \neq 0$

Answer: A

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102. If x,y,z, are real and distinct number, then the value of

$$\frac{(x-y)^3+(y-z)^3+(z-x)^2}{(x-y)(y-z)(z-y)}$$ is

A. 1

B. 2

C. xyz

D. 3

Answer: D

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103. If (x-a) is a factor of $x^3 - a^2x + x + 2,$ then 'a' is equal to

A. 0

B. 2

C. -2

D. 1

Answer: C

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104. If $2x^3 - 5x^2 + x + 2 = (x-2)\left(ax^2 - bx - 1\right)$ then a and b are respectively.

A. 2,1

B. 2,-1

C. 1,2

D. $-1, 1/2$

Answer: A

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105. The polynomial $P(x) = kx^3 + 3x^2 - 3$ and $Q(x) = 2x^3 - 5x + k$, when divided by (x-4) leave the same remainder. The value of 'k' is

A. 2

B. 1

C. 0

D. -1

Answer: B

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106. Find the intervals where f(x) is negative $\frac{(x-1)(x-2)}{(2x-5)(x+4)}$

A. $[-4, 1] \cup \left(2, \frac{5}{2}\right)$

B. $(-4, 1) \cup \left(2, \frac{5}{2}\right)$

C. $(-4, 1] \cup \left[2, \frac{5}{2}\right)$

D. None of these

Answer: B

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107. Solution set of $\frac{(x-2)^2(1-x)(x-3)^3(x-4)^2}{(x-1)} \leq 0$ is

A. (-1,1)

B. $[-1, 1] \cup [3, 4]$

C. $(-1, 1] \cup [3, \infty)$

D. None of these

Answer: D

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108. The interval in which $\frac{x^2 - 2x - 3}{x^2 - 2x}$ is negative,

A. $(-1, 0) \cup (2, 3)$

B. $(1, 0) \cup (2, 3]$

C. $[-1, 0) \cup (2, 3]$

D. None of these

Answer: A

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109. Solution set of $\frac{(x-1)^{101}(x-2)^{102}(x-3)^{103}}{(x-1)^{201}(x+2)^{202}(x+3)^{203}} > 0$ is

A. $(-1\infty, -3) \cup (-1, 1] \cup [3, \infty) \cup \{2\}$

B. $(-\infty, -3) \cup [3, \infty)$

C. $(-1, 1] \cup [3, \infty)$

D. $(-1\infty, -3) \cup (-1, 1]$

Answer: A

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110. Solution set of $\frac{x^2 - |x| - 12}{x-3} \geq 2x$ is

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111. Solve : $\left|\frac{x^2 - 5x + 4}{x^2 - 4}\right| \leq 1$

A. a) $\left[0, \frac{5}{2}\right)$

B. b) $\left[0, \frac{8}{5}\right] \cup \left[\frac{5}{2}, \propto\right)$

C. c) $\left[\frac{5}{2}, \propto\right)$

D. d) None of these

Answer: B

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112. Solve : $\frac{1}{(x-2)} - \frac{1}{x} \leq \frac{2}{(x+2)}$

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113. If $\log_7 2 = a$, then $\log_{49} 28$ is equal to

A. $\frac{1+2a}{4}$

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

C. $\frac{1+2a}{3}$

D. None of these

Answer: B

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114. The solution set of the inequality

$\log_{10}(x^2 - 16) \leq \log_{10}(4x - 11)$ is

A. (3,5]

B. (4,5]

C. (5,6]

D. None of these

Answer: B

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115. If $\log_4\left(x^2+x\right)-\log_4(x+1)=2$, then the value of x is

A. 1

B. 2

C. 4

D. 16

Answer: D

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116. If $\log_{12} 18=x, \log_{24} 4=y$ then the value of xy-(2x+5y)+4 is

A. 0

B. 1

C. 2

D. 3

Answer: A

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117. The number of solution(s) of $\log_4(x-1) = \log_2(x-3)$ is

A. 3

B. 1

C. 2

D. 0

Answer: B

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118. If $a^x = b, b^y = c, c^z = a$ then the value of xyz is

A. 0

B. 1

C. 2

D. 3

Answer: B

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119. The value(s) of x, satisfying $3^{4\log_9(x+1)} = 2^{2\log_2 x} + 3$

A. 0

B. 1

C. 3

D. None of these

Answer: B

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120. The value of x satisfying

$|x-1|^{\log_3 x^2 - 2\log_x 9} = (x-1)^7$ is

A. 81

B. 18

C. 3

D. None of these

Answer: A

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121. The value of x satisfying

$\log_{(2x+3)}\left(6x^2+23x+21\right) = 4 - \log_{(3x+7)}\left(4x^2+12x+9\right)$ is

A. 0

B. 1

C. -1

D. $-\frac{1}{4}$

Answer: D

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122. The value of x satisfying

$x + \log_{10}(1 + 2^x) = x \log_{10} 5 + \log_{10} 6$ is

A. 0

B. 1

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

D. None of these

Answer: B

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123. Solve $x^{\left[\frac{3}{4}(\log_2 x)^2+\log_2 x-\frac{5}{4}\right]}=\sqrt{2}$

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124. $\log_5\left(6+\frac{2}{x}\right)+\log_{(1/5)}\left(1+\frac{x}{10}\right)\leq 1$

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125. Number of solution of $x^2+x+|x|+1\leq 0$ is

A. 0

B. 1

C. 2

D. 4

Answer: A

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126. Solution set of x satisfying $x^2 - |x + 2| + x > 0$ is

A. $(-\infty, -\sqrt{2}) \cup (\sqrt{2}, \infty)$

B. $(\sqrt{2}, \infty)$

C. $(-\infty, -\sqrt{2})$

D. $(-\sqrt{2}, \sqrt{2})$

Answer: A

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127. The set of all integers x such that $|x - 3| < 2$ is equal to

A. {1,2,3,4,5}

B. {1,2,3,4}

C. {2,3,4}

D. {-4,-3,-2}

Answer: C

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128. Solution set of x satisfying $\frac{|x+3|+x}{x+2} > 1$ is

A. $x \in (-5, -2)$

B. $x \in (-5, -2) \cup (-1, \infty)$

C. $x \in (-1, \infty)$

D. None of these

Answer: B

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129. Number of solution of $\left|x^2+4x+3\right|+2x+5=0$ is/are

A. 0

B. 1

C. 2

D. 4

Answer: C

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130. Solution set of x satisfying $||x-2|-1| \geq 3$ is

A. $(-\infty, -2] \cup [6, \infty)$

B. $[6, \infty)$

C. $(-\infty, -2]$

D. $[-2, 6]$

Answer: A

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131. Solution set of x satisfying $\left|\frac{x}{x-1}\right| + |x| = \frac{x^2}{|x-1|}$ is

A. a) $\{0\} \cup (1, \infty)$

B. b) $(1, \infty)$

C. c) $(-1, \infty)$

D. d) $(-1, 1)$

Answer: A

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132. Solution set of x satisfying $2^x + 2^{|x|} \geq 2\sqrt{2}$ is

A. $(-\infty, \log_2(\sqrt{2}-1)) \cup \left[\frac{1}{2}, \infty\right)$

B. $(-\infty, \log_2(\sqrt{2}-1)] \cup \left[\frac{1}{2}, \infty\right)$

C. $(-\infty, \log_2(\sqrt{2}-1)] \cup \left(\frac{1}{2}, \infty\right)$

D. $(-\infty, \log_2(\sqrt{2}-1)]$

Answer: B

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133. Solution set of x satisfying $|x-1|+|x-2|+|x-3| \geq 6$ is

A. $x \in [4, \infty)$

B. $x \in (-\infty, 0)$

C. $x \in (-\infty, 0] \cup [4, \infty)$

D. None of these

Answer: C

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134. The solution set of these equation

$2^{|y|} - \left|2^{y-1} - 1\right| = 2^{y-1} + 1$

A. $\{-1\} \cup [1, \infty)$

B. $\{-1\} \cup (1, \infty)$

C. $\{0\} \cup [1, \infty)$

D. none of these

Answer: A

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135. $\sin^2 5^\circ + \sin^2 10^\circ + \sin^2 15^\circ + \ldots\ldots\ldots + \sin^2 85^\circ + \sin^2 90^\circ$ equals to

A. 7

B. 8

C. 9

D. $9\frac{1}{2}$

Answer: D

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136. If $\sin A + \sin B + \sin C = 3$, then the value of $\cos A + \cos B + \cos C$ is equal to

A. 3

B. 2

C. 0

D. 1

Answer: C

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137. If $\theta \in (-\pi, 2\pi)$ then the interval in which $\cos\theta > 0$ is

A. $(-\pi, \pi)$

B. $(0, 2\pi)$

C. $(\pi, 2\pi)$

D. $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right) \cup \left(\frac{3\pi}{2}, 2\pi\right)$

Answer: D

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138. The value of $\sin 750^\circ - \sin(-750^\circ) + \cos 339^\circ - \cos(-339^\circ)$ is equal to

A. 0

B. 2

C. 1

D. 4

Answer: C

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139. If $\sqrt{1-\sin A}=\sin\frac{A}{2}-\cos\frac{A}{2}$, then $\frac{A}{2}-\frac{\pi}{4}$ could lie in quadrant :

A. I or II

B. II or III

C. I or III

D. I or IV

Answer: A

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140. Prove that $\tan 1^\circ \tan 2^\circ \tan 3^\circ \ldots\ldots . \tan 88^\circ \tan 89^\circ = 1$

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141. Prove that

$\sin 10^\circ + \sin 20^\circ + \sin 30^\circ + \ldots\ldots\ldots + \sin 360^\circ = 0$

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142. Prove that

$\tan A \cdot \tan(A + 60^\circ) + \tan A \cdot \tan(A - 60^\circ) + \tan(A + 60^\circ)\tan(A - 60$

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143. If the angle θ be divided into two parts such that the tangent of one part is m times the tangent of the other, then prove that their difference ϕ is obtained from the relation is $\sin\phi = \left|\frac{(m-1)}{(m+1)}\right|\sin\theta$

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144. If $\cos\theta + \cos^2\theta = 1$, prove that

$\sin^{12}\theta + 3\sin^{10}\theta + 3\sin^8\theta + \sin^6\theta + 2\sin^4\theta + 2\sin^2\theta - 2 = 1$

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145. Evaluate :

$$\lim_{x \to 0} \frac{3 \sin^{-1} x}{4(e^x - 1)}$$

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146. Evaluate :

$$\lim_{x \to 0} \frac{\log(1 + 5x)}{e^{2x} - 1}$$

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147. Evaluate :

$$\lim_{x \to 0} \frac{\sin(1 + x) - \sin(1 - x)}{x}$$

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148. Evaluate :

$$\lim_{x \to 0} \frac{\tan x - \sin x}{x^3}$$

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149. Differentiate the following functions w.r.t.'x' :

$\cos\sqrt{(x^2+3x+4)}$

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150. Differentiate the following functions w.r.t.'x' :

$$\frac{x\sin^{-1}x}{\sqrt{1-x^2}}$$

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151. Differentiate the following functions w.r.t.'x' :

log (sin (logx))

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152. Differentiate the following functions w.r.t.'x' :

$e^{3\sqrt{ax}}$

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153. Find $\frac{dy}{dx}$:

$y = (\tan x)^{\cot x} + (\cot x)^{\tan x}$

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154. Find $\frac{dy}{dx}$:

$y = (\log x)^{x}$

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155. Find $\frac{dy}{dx}$:

$x^3 + y^3 = 3axy$

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156. If sin y = x sin(a+y), than prove that

$$\frac{dy}{dx} = \frac{\sin^2(a+y)}{\sin a}$$

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157. Find the derivative of $\tan^{-1}\left(\frac{2x}{1-x^2}\right)$ w.r.t. $\sin^{-1}\left(\frac{2x}{1+x^2}\right)$.

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158. Show that $\frac{x}{1+x} < \log(1+x) < x \, \forall x > 0.$

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159. Find the equations of tangent and normal to the curve $y(x-2)(x-3) - x + 7 = 0$ at the point where it meets the x-axis.

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160. Determine the maximum and minimum values of the function $f(x) = 2x^3 - 15x^2 + 36x + 10$

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161. Evaluate :

$$\int \frac{\tan\sqrt{x} \cdot \sec^2\sqrt{x}}{\sqrt{x}} dx$$

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162. Evaluate :

$$\int \frac{xe^x dx}{(x+1)^2}$$

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163. Evaluate :

$$\int_0^1 \frac{x^5}{1+x^{12}}dx$$

Watch Video Solution

164. Evaluate :

$$\int_0^{\pi/2} \cos^3 x \cdot \sin x dx$$

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165. Solve the following differential equations:

$$\left(xy^2+x\right)dx+\left(yx^2+y\right)dy=0$$

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166. Solve the following differential equations:

$$\frac{dy}{dx}=e^{x+y}+x^2e^y$$

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167. The value of $\lim_{n \to \propto} \frac{(n+1)(2n+1)}{n^2}$ is

A. 0

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

C. 1

D. 2

Answer: D

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168. The derivative of $\sqrt{\left(e^{\sqrt{x}}\right)}$ with respect to x is

A. $\frac{1}{2\sqrt{\left(e^{\sqrt{x}}\right)}}$

B. $\frac{e^{\sqrt{x}}}{2\sqrt{\left(e^{\sqrt{x}}\right)}}$

C. $\frac{e^{\sqrt{x}}}{4\sqrt{(xe^{\sqrt{x}})}}$

D. $\frac{e^{\sqrt{x}}}{2\sqrt{(xe^{\sqrt{x}})}}$

Answer: C

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169. If $y\sqrt{1-x^2}+x\sqrt{1-y^2}=1$ when $|x|<1$ and $|y|<1$ find $\frac{dy}{dx}$

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

B. $-\sqrt{\frac{1-y^2}{1-x^2}}$

C. $\sqrt{\frac{1-y^2}{1-x^2}}$

D. None of these

Answer: B

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170. The angle between the tangents to the curves y=sin x and y = cos x at their point of intersection is

A. $\tan^{-1}(\sqrt{2})$

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

C. $\tan^{-1}(2)$

D. $\tan^{-1}(2\sqrt{2})$

Answer: D

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171. The maximum value of $\left(\frac{1}{x}\right)^x, x > 0$ is

A. 1

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

C. e

D. $e\sqrt{e}$

Answer: D

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172. If $y = \tan^{-1}\left(\frac{\sqrt{1+x^2}-1}{x}\right)$, then $\frac{dy}{dx}$ at x = 0 is

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

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

C. 1

D. 0

Answer: A

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173. The slope of the tangent to the curve xy=c^2 at $\left(ct, \frac{c}{t}\right)$ is

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

B. $\frac{-1}{t^2}$

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

D. $\frac{-1}{t}$

Answer: B

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174. $\int \frac{dx}{x+\sqrt{x}}$ is equal to

A. $\log\left(x+\sqrt{x}\right)+c$

B. $2\log\left(\sqrt{x}+1\right)+c$

C. $2\log\left(x+\sqrt{x}\right)+c$

D. $\log\left(x+\sqrt{x}+1\right)+c$

Answer: B

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175. The value of $\int_{-2}^{3} \sqrt{x^2 - 2x + 1}\, dx$ is

A. -5/2

B. 5

C. 0

D. $6\frac{1}{2}$

Answer: D

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176. The solution of the differential equation

$y\sqrt{1+x^2}dy + x\sqrt{1+y^2}dx = 0$ is

A. $y\sqrt{1+x^2} + x\sqrt{1+y^2} = c$

B. $\sqrt{1+x^2} + \sqrt{1+y^2} + \log|xy| = c$

C. $\sqrt{1+x^2} + \sqrt{1+y^2} = c$

D. $\sqrt{1+x^2} \cdot \sqrt{1+y^2} = c$

Answer: C

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177. The value of 'a' for which the function f(x)= sinx-cosx-ax+b decreases for $x \in R$ is given by

A. $a \leq \sqrt{2}$

B. $a \geq \sqrt{2}$

C. $a < 1$

D. $a \geq 1$

Answer: B

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178. If $f(x) = |\sin x| + |\cos x|$,then $\int_0^{\pi} f(x)$ dx is equal to

A. 0

B. 1

C. 2

D. 4

Answer: D

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179. A particle moves along a straight line according to the law $s = \frac{t^3}{3} - 3t^2 + 9t + 17$, where s is in meters and t in second. Velocity decreases when

A. $0 < t < 5$

B. $0 < t < 3$

C. $t > 5$

D. $t > 3$

Answer: B

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180. number of solution of the integral part of {1+x}+2x=4[x+1]-6 is

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181. Solution set of x satisfying $(x)^2 = [x]^2 + 2x$ is where [x] and (x) are the integers just less than or equal to x and just greater than or equal to x respectively

A. x=0

B. $x = 0, \frac{1}{2}$

C. $x = 0, N + \frac{1}{2}$

D. None of these

Answer: C

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182. Number of solution of equation $[x]^2 = x + 2\{x\}$ is/are , where [.] and {.} denote the greatest integer and the fractional part functions, respectively

A. 4

B. 3

C. 2

D. 1

Answer: A

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183. Number of solution of equation $|2x - 1| = 3[x] + 2\{x\}$ is

A. 0

B. 1

C. 2

D. 3

Answer: B

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184. Number of solution of equation $x^2 - 4x + [x] + 3 = 0$

A. 0

B. 1

C. 2

D. 3

Answer: A

Watch Video Solution

185. Number of solution of equation $y = \frac{1}{3}[\sin x + [\sin x + [\sin x]]]$ and [y+[y]]=2cosx is/are

A. 0

B. 1

C. 2

D. 3

Answer: A

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186. The value of $\sum_{r=1}^{2000} \frac{\{x+r\}}{2000}$ is

A. 1

B. x+1

C. {x}

D. None of these

Answer: C

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187. Solution set of x satisfying $(x)^2 + [x]^2 > 25$ is

A. [-4,4]

B. `(-infty,-4) cup[4,infty)

C. $(-\infty, -4]$

D. $[4, \infty)$

Answer: B

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188. Solve $[|x-1|]+[|7-x|=6$ is

A. $(0,1] \cup [7,8)$

B. $(0,1] \cup [7,8) \cup \{2,3,4,5,6\}$

C. {2,3,4,5,6}

D. (0,8)

Answer: B

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189. Non-integral solutions to the equation [x][y]=x+y, lie on

A. x=y=0

B. x+y=6

C. x+y=0,x+y=6

D. None of these

Answer: C

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190. If $\frac{x}{(x-3)(x-2)} = \frac{3}{x-3} + \frac{A}{x-2}$, then A=

A. 1

B. 2

C. -1

D. -2

Answer: D

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191. If $\frac{3x}{(x-6)(x+a)} = \frac{2}{x-6} + \frac{1}{x+a}$, then a=

A. 1

B. 2

C. 3

D. 4

Answer: C

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192. If $\frac{ax}{(x+2)(x-1)} = \frac{2}{x+2} + \frac{1}{x-1}$, then a=

A. 1

B. 2

C. 3

D. 4

Answer: C

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193. If $\frac{(e^x+2)}{(e^x-1)(2e^x-3)} = -\frac{3}{e^x-1} + \frac{B}{2e^x-3}$, then B=

A. 1

B. 3

C. 5

D. 7

Answer: D

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194. If $\frac{2x+A}{(x-3)(x+2)} = \frac{9}{5(x-3)} + \frac{B}{(x+2)}$, then

A. A=3

B. B=5

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

D. $B = \frac{1}{5}$

Answer: A::D

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195. If $\frac{2x}{x^3-1} = \frac{A}{x-1} + \frac{Bx+C}{x^2+x+1}$, then

A. A=-B=C

B. $A = B \neq C$

C. $A \neq B = C$

D. $A \neq B \neq C$

Answer: A

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196. If $\frac{3x+4}{(x+1)^2(x-1)} = \frac{A}{x-1} + \frac{B}{x+1} + \frac{C}{(x+1)^2}$, then A=

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

B. $\frac{15}{4}$

C. $\frac{7}{4}$

D. $-\frac{1}{4}$

Answer: C

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197. If $\frac{ax+b}{(3x+4)^2} = \frac{1}{3x+4} - \frac{3}{(3x+4)^2}$ then find a and b

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198. If $\frac{x^3-6x^2+10x-2}{x^2-5x+6} = f(x) + \frac{A}{x-2} + \frac{B}{x-3}$, then f(x)=

A. x-1

B. x+1

C. x

D. x+2

Answer: A

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199. If $\frac{1-\cos x}{\cos x(1+\cos x)} = \frac{\sin \alpha}{\cos x} - \frac{2}{1+\cos x}$ then α=

A. $\pi/8$

B. $\pi/4$

C. $\pi/2$

D. π

Answer: C

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200. Solve the inequality $\frac{(x-1)}{(x^2-4x+3)} < 1$

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201. If $4^A + 9^B = 10^C$,whereA= $\log_{16} 4$, $B = \log_3 9$ and $C = \log_x 83$, then find x.

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202. Solve the following equations for 'x' :

$$\log_3\left(\log_9 x + \frac{1}{2} + 9^x\right) = 2x$$

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203. Solve the following equations for 'x' :

$$2\log_4(4 - x) = 4 - \log_2(-2 - x)$$

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204. Solve the following inequalities :

$\log_{0.5}(x+5)^2 > \log_{1/2}(3x-1)^2$

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205. Solve the following inequalities :

$\log_{1/2}\log_3\left(\frac{x+1}{x-1}\right) \geq 0$

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206. Solve the following inequalities :

$\log_{(3x^2+1)} 2 < \frac{1}{2}$

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207. Solve the following inequalities :

$\log_{x^2}(2+x) < 1$

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208. Solve the equation $\sqrt{a(2^x - 2) + 1} = 1 - 2^x$ for every value of the parameter a.

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209. Solve the following linear equations

$|x|^2 = |x| + 4 = 2x^2 - 3|x| + 1$

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210. Solve the following linear equations

$||x - 1| - 2| = |x - 3|$

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211. Solve the simultaneous equations $|x+2|+y=5$ and $x-|y|=1$

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212. Find the solution set of $|2x-3|+|x+5| \leq |x-8|$

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213. If $3\sin\alpha = 5\sin\beta$, then find the value of $\dfrac{\tan\frac{\alpha+\beta}{2}}{\tan\frac{\alpha-\beta}{2}}$

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214. If y = $\cos^2(45^\circ + x) + (\sin x - \cos x)^2$, then find the maximum and minimum value of y.

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215. Find the general solution of sin x-3 sin 2x+ sin 3x= cos x - 3 cos 2x + cos 3x.

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216. For all values of α, β, γ prove that:

$$\cos\alpha + \cos\beta + \cos\gamma + \cos(\alpha+\beta+\gamma)$$
$$= 4\cos\frac{\alpha+\beta}{2} \cdot \cos\frac{\beta+\gamma}{2} \cdot \cos\frac{\gamma+\alpha}{2}$$

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217. If m $\tan(\theta - 30^\circ) = n\tan(\theta + 120^\circ)$, show that $\cos 2\theta = \frac{m+n}{2(m-n)}$

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218. Solve the following inequalities :

$$(|x-1|-3)(|x+2|-5) < 0$$

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219. Solve the following inequalities :

$\sin 3x < \sin x$

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220. Solve the following inequalities :

$\tan^2 x - \left(1 + \sqrt{3}\right)\tan x + \sqrt{3} < 0$

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221. If x,y,z, $\in$ R such that $x + y + z = 4, x^2 + y^2 + z^2 = 6$ then find the range of x.

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222. Complete set of values of x satisfying the inequality

$x - 3 < \sqrt{x^2 + 4x - 5}$ is

A. $(-\infty, -5] \cup (1, \infty)$

B. (-5,3]

C. [3,5)

D. (-5,3)

Answer: A

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223. The set of all values of x for which $\frac{\sqrt{-x^2 + 5x - 6}}{\sqrt{1 - 2\{x\}}} \geq 0$ is

(where{.}denotes the fractional part function)

A. $\left[2, \frac{5}{2}\right) \cup \{3\}$

B. (2,3)

C. $\left(\frac{5}{2}, 3\right]$

D. $\left[2, \frac{5}{2}\right) \cup \left(\frac{5}{2}, 3\right]$

Answer: A

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224. The solution of the inequality $\frac{|x+2|-|x|}{\sqrt{4-x^3}} \geq 0$ is

A. $[-1, \sqrt[3]{4})$

B. $[1, \sqrt[3]{4})$

C. $[-1, \sqrt[3]{2})$

D. $[0, \sqrt[3]{4})$

Answer: A

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225. Exhaustive set of values of x satisfying $\log_{|x|}\left(x^2+x+1\right) \geq 0$ is

A. (-1,0)

B. $(-\infty, -1) \cup (1, \infty)$

C. $(-\infty, \infty) - \{-1, 0, 1\}$

D. $(-\infty, -1) \cup (-1, 0) \cup (1, \infty)$

Answer: D

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226. If $\frac{\log_2\left(4x^2-x-1\right)}{\log_2\left(x^2+1\right)} > 1$, then x lies in the interval

A. (-infty,-2/3)`

B. $(-1, \infty)$

C. $\left(-\frac{2}{3}, 0\right)$

D. none of these

Answer: A

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227. The set of values of x satisfying simultaneously the inequalities $\frac{\sqrt{(x-8)(2-x)}}{\log_{0.3}\left(\frac{10}{7}(\log_2 5-1)\right)} \geq 0$ and $2^{x-3}-31>0$ is

A. a unit set

B. an empty set

C. an infinite set

D. a set consisting of exactly two elements

Answer: C

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228. Let $\alpha = \frac{\pi}{3}$, then the solution set of the inequality $\log_{\sin\alpha}(2 - \cos^2 x) < \log_{\sin\alpha}(1 - \sin x)$, where $x \in (0, 2x)$ and $x \neq \frac{\pi}{2}$, is

A. $(\alpha, \pi - \alpha)$

B. $\left(\alpha, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi - \alpha\right)$

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

D. $\left(0, \frac{\pi}{2}\right) \cup \left(\frac{\pi}{2}, \pi\right)$

Answer: D

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229. If f(x) $=\cos\left[\pi^2\right]x + \cos\left[-\pi^2\right]x$, where [x] stands for the greatest integer function, then find $f\left(\frac{\pi}{2}\right), f\left(\frac{\pi}{4}\right)$.

A. $f\left(\frac{\pi}{2}\right) = -1$

B. $f(\pi) = 1$

C. $f(-\pi) = 0$

D. $f\left(\frac{\pi}{4}\right) = \sqrt{2}$

Answer: A

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230. $\log_{0.5} \log_5 \left(x^2 - 4\right) > \log_{0.5} 1$, then 'x' lies in the interval

A. $(-3, -\sqrt{5}) \cup (\sqrt{5}, 3)$

B. $(-3, -\sqrt{5}) \cup (\sqrt{5}, 3\sqrt{5})$

C. $(\sqrt{5}, 3\sqrt{5})$

D. ϕ

Answer: A

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231. Solution set of the inequality $2 - \log_2\left(x^2 + 3x\right) \geq 0$ is

A. [-4,1]

B. $[-4, -3) \cup (0, 1]$

C. $(-\infty, -3) \cup (1, \infty)$

D. $(-\infty, -4)[1, \infty)$

Answer: B

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232. Values of x satisfying the equation

$\left|\log_{\sqrt{3}} x - 2\right| - \left|\log_3 x - 2\right| = 2$ are

A. $1/9$

B. $\sqrt[3]{9}$

C. 8

D. $1/8$

Answer: A

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233. The equation $\sqrt{x-1}-\sqrt{x-1}=\sqrt{4x-1}$ has

A. no solution

B. one solution

C. two solution

D. more than two solutions

Answer: A

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234. The number of values of x in the interval $[0, 5\pi]$ satisfying the equation $3\sin^2 x - 7\sin x + 2 = 0$ is :

A. 0

B. 5

C. 6

D. 10

Answer: C

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235. In a $\Delta PQR, \angle R = \frac{\pi}{2}$. If $\tan\left(\frac{P}{2}\right)$ and $\tan\left(\frac{Q}{2}\right)$ are the roots of $ax^2 + bx + c = 0, a \neq 0$, then

A. b=a+c

B. b=c

C. c=a+b

D. a=b+c

Answer: C

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236. The number of real roots of $3^{2x^2-7x+7} = 9$ is

A. 0

B. 2

C. 1

D. 4

Answer: B

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237. The number of the real solutions of the equation $x^2 - 3|x| + 2 = 0$ is

A. 2

B. 4

C. 1

D. 3

Answer: B

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238. If $\sin(x-y)=\cos(x+y)=\frac{1}{2}$, then the value of x and y lying between 0 and π are given by :

A. $x=\frac{\pi}{4}, y=\frac{3\pi}{4}$

B. $x=\frac{\pi}{4}, y=\frac{\pi}{12}$

C. $x=\frac{11\pi}{12}, y=\frac{\pi}{12}$

D. $x=\frac{10\pi}{12}, y=\frac{3\pi}{4}$

Answer: B

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239. The minimum value of $f(x) = |x-1| + |x-2| + |x-3|$ is equal to

A. 1

B. 2

C. 3

D. 0

Answer: B

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240. The set of real value(s) of 'p' for which the equation $|2x+3| + (2x-3) = px + 6$ has more than two solutions is

A. [0,4)

B. (-4,4)

C. R-{4,-4,0}

D. {0}

Answer: D

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241. Values of x satisfying $\left(\frac{1}{3}\right)^{\{x\}} > \frac{1}{\sqrt{3}}$ are (where {.} denotes the fractional part function)

A. π

B. $-1+\frac{1}{\sqrt{2}}$

C. $2+\frac{2}{\sqrt[3]{9}}$

D. e

Answer: A

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242. Solution of $|4x+3|+|3x-4|=12$ are

A. $x=-\frac{7}{3},\frac{3}{7}$

B. $x=-\frac{5}{2},\frac{2}{5}$

C. $x=-\frac{11}{7},\frac{13}{7}$

D. $x=-\frac{3}{7},\frac{7}{5}$

Answer: C

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243. The equation a sin x+b cos x=c, where $|c|>\sqrt{a^2+b^2}$ has

A. a unique solution

B. infinite number of solutions

C. no solution

D. none of the above

Answer: C

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244. The value of $\frac{1-\tan^2 15^\circ}{1+\tan^2 15^\circ}$ is

A. 1

B. $\sqrt{3}$

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

D. 2

Answer: C

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245. The value of $\sin 55^\circ - \sin 19^\circ + \sin 53^\circ - \sin 17^\circ$ is always equal to

A. $\cos 1^\circ$

B. $\sin 1^\circ$

C. $\tan 1^\circ$

D. $-\cos 1^\circ$

Answer: A

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246. If $\alpha \in \left[\frac{\pi}{2}, \pi\right]$, then the value of $\sqrt{1+\sin\alpha} - \sqrt{1-\sin\alpha}$ is equal to:

A. $2\cos\frac{\alpha}{2}$

B. $2\sin\frac{\alpha}{2}$

C. 2

D. none of these

Answer: A

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247. Let α, β be such that $\pi < \alpha - \beta < 3\pi$. If $\sin\alpha + \sin\beta = \frac{-21}{65}$ and $\cos\alpha + \cos\beta = \frac{-27}{65}$, then the value of $\cos\left(\frac{\alpha-\beta}{2}\right)$ is

A. $-\frac{3}{\sqrt{130}}$

B. $\frac{3}{\sqrt{130}}$

C. $\frac{6}{65}$

D. $-\frac{6}{65}$

Answer: A

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248. If α is a root of $25\cos^2\theta + 5\cos\theta - 12 = 0$, $\frac{\pi}{2} < \alpha < \pi$, then $\sin 2\alpha =$

A. $\frac{24}{25}$

B. $-\frac{24}{25}$

C. $\frac{13}{18}$

D. $-\frac{13}{18}$

Answer: B

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249. Let $f(\theta) = \sin\theta(\sin\theta + \sin 30)$ then $f(\theta)$

A. ≥ 0 only when $\theta \geq 0$

B. ≤ 0 for all real θ

C. ≥ 0 for all real θ

D. ≤ 0 only when $\theta \leq 0$

Answer: C

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250. The general solution of the equation, $2\cos 2x = 3 \cdot 2\cos^2 x - 4$ is

A. $x = 2n\pi, n \in I$

B. $x = n\pi, n \in I$

C. $x = n\pi/4, n \in I$

D. $x = n\pi/2, n \in I$

Answer: B

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251. Angles A and B are obtuse angles such that, tan A + tan B + tan A tan B =1. If A-B= 41°, then

A. $A = 133^\circ, B = 92^\circ$

B. $A = 143^\circ, B = 102^\circ$

C. $A = 173^\circ, B = 132^\circ$

D. $A = 163^\circ, B = 122^\circ$

Answer: A

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252. If $x \in \left[0, \frac{\pi}{2}\right]$, the number of solutions of the equation, sin 7x + sin 4x+ sinx=0 is

A. 3

B. 5

C. 6

D. none of these

Answer: B

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253. The principal solution set of the equation, 2 cos x = $\sqrt{2 + 2\sin 2x}$ is

A. $\left\{\frac{\pi}{8}, \frac{13\pi}{8}\right\}$

B. $\left\{\frac{\pi}{4}, \frac{13\pi}{8}\right\}$

C. $\left\{\frac{\pi}{8}, \frac{13\pi}{10}\right\}$

D. none of these

Answer: A

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254. The value of x and y satisfying the equations $\log_{100}|x+y| = \frac{1}{2}, \log_{10} y - \log_{10}|x| = \log_{100} 4$ are

A. $x = \frac{10}{3}, y = \frac{20}{3}$

B. x=10,y=20

C. $x = -\frac{10}{3}, y = \frac{20}{3}$

D. x=10,y=-20

Answer: A

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255. Total number of solutions of [sin x] + cos x = 0, where [.] denotes the greatest integer function, for $x \in [0, 100\pi]$ is

A. 100

B. 50

C. 25

D. 0

Answer: D

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256. Let $f(n) = \left[\frac{1}{2} + \frac{n}{100}\right]$, where [.] denotes the greatest integer function,then the value of $\sum_{n=1}^{151} f(n)$

A. 101

B. 102

C. 104

D. 103

Answer: C

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257. If $0 < \theta < 2\pi$, then the intervals of values of θ for which $2\sin^2\theta - 5\sin\theta + 2 > 0$ is

A. $\left(0, \frac{\pi}{6}\right) \cup \left(\frac{5\pi}{6}, 2\pi\right)$

B. $\left[0, \frac{\pi}{6}\right] \cup \left[\frac{5\pi}{6}, 2\pi\right]$

C. $\left[0, \frac{\pi}{3}\right] \cup \left[\frac{2\pi}{3}, 2\pi\right]$

D. None of these

Answer: A

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258. Number of solutions of the equation [2x] - 3{2x} = 1 is (where [/] and {.} denote greatest integer and fractional part function respectively)

A. 1

B. 2

C. 3

D. 0

Answer: B

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259. If $x \geq 0$ and $y \geq 0$, then the area bounded by the graph of [x] + [y] = 2 is (where [.] denotes greatest integer function)

A. 4 sq. unit

B. 1 sq. unit

C. 2 sq. unit

D. 3 sq. unit

Answer: D

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260. Let $\cos(\alpha+\beta)=\frac{4}{5}$ and let $\sin(\alpha-\beta)=\frac{5}{13}$, where $0\leq\alpha,\beta\leq\frac{\pi}{4}$. Then $\tan 2\alpha=$

A. $\frac{56}{33}$

B. $\frac{19}{12}$

C. $\frac{20}{7}$

D. $\frac{25}{16}$

Answer: A

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261. If [x+[2x]] < 3, where [.] denotes the greatest integer function, then x is

A. [0,1)

B. $\left(-\infty, \frac{3}{2} \right]$

C. $(1, \infty)$

D. $(-\infty, 1)$

Answer: D

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262. Let a,b,c,d, be any four real numbers. Then $a^n + b^n = c^n + d^n$ holds for any natural number n if

A. a+b=c+d

B. a-b=c-d

C. $a + b = c + d, a^2 + b^2 = c^2 - d^2$

D. $a - b = c - d, a^2 - b^2 = c^2 - d^2$

Answer: D

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263. Let P(x) be a polynomial, which when divided by x-3 and x-5 leaves remainders 10 and 6 respectively. If the polynomial is divided by (x-3) (x-5) then the remainder is

A. -2x + 16

B. 16

C. 2x - 16

D. 60

Answer: A

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264. If $\log_{0.2}(x-1) > \log_{0.04}(x+5)$ then

A. $-1 < x < 4$

B. $2 < x < 3$

C. $1 < x < 4$

D. $1 < x < 3$

Answer: C

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265. The number of real roots of equation $\log_e x + ex = 0$

A. 0(zero)

B. 1

C. 2

D. 3

Answer: B

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266. Let $x_1, x_2, \ldots\ldots, x_{15}$ be 15 distinct numbers chosen from 1,2,3,....,15. Then the value of $(x_1 - 1)(x_2 - 1)(x_3 - 1)\ldots\ldots . (x_{15} - 1)$ is

A. always ≤ 0

B. 0(zero)

C. always even

D. always odd

Answer: B

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