**ACTIVE SITE TUTORIALS**

**Date :** 07-09-2019 **TEST ID: 599**

**Time :** 10:33:00 **MATHEMATICS**

**Marks :** 634

2.INVERSE TRIGONOMETRICE FUNCTIONS

**Single Correct Answer Type**

| 1. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 2. | The value ofis equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 3. | The value of is equal to | | | | | | | |
|  | a) | Zero | b) |  | c) |  | d) | None of these |
| 4. | If , then where is equal to | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 4 | d) | None of these |
| 5. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 6. | The product of all values of satisfying the equation  is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 7. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 8. | If , then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 9. | If thenis equal to | | | | | | | |
|  | a) |  | b) | 3 | c) |  | d) |  |
| 10. | The value of for allis | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 11. | Letthen the number of values of satisfying the equation is | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 3 | d) | 4 |
| 12. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 13. | If for , then equals | | | | | | | |
|  | a) | 1/2 | b) | 1 | c) |  | d) |  |
| 14. | The trigonometric equation has a solution for | | | | | | | |
|  | a) | All real values | b) |  | c) |  | d) |  |
| 15. | The value of for which has a real solution is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 16. | Of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 17. | holds if | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 18. | The sum of the solutions of the equation is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 19. | The value ofis | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | Independent of |
| 20. | If is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 21. | If , then the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 22. | The value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 23. | The value of which satisfies equation is valid in the interval | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 24. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 25. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 26. | is given by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 27. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 28. | The value is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 29. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 30. | Ifthen | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 31. | If takes negative permissible value, then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 32. | The solution set of the equation is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 33. | If , then the value ofwill be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 34. | Iffor at least one realthen | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 35. | The number of integral values of for which the equation has a solution is | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 3 | d) | 4 |
| 36. | The value of , whereis equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 37. | If then the maximum value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 38. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 39. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 40. | The number of solution of the equation is | | | | | | | |
|  | a) | 1 | b) | 0 | c) | 2 | d) | None of these |
| 41. | If then | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 42. | Ifwhere denotes the greatest integer function, then the complete set of values of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 43. | If then the value of is | | | | | | | |
|  | a) | 1 | b) |  | c) |  | d) | None of these |
| 44. | can have a solution for | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 45. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 46. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 47. | Range of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 48. | The value of for which is | | | | | | | |
|  | a) |  | b) | 1 | c) | 0 | d) |  |
| 49. | Range of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 50. | If thenis equal to | | | | | | | |
|  | a) |  | b) |  | c) | 13 | d) |  |
| 51. | If then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 52. | The number of solution of the equation is given by | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 53. | The value of where is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 54. | Ifwhere thenis equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 55. | If andthenis also equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 56. | is equal to | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) |  | | | | | | | |
| 57. | If , then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 58. | If then is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 59. | is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 60. | If and thenis equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 61. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 62. | The value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 63. | If andthen the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 64. | The value of the expression is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 65. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 66. | The value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 67. | Ifthen is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 68. | If then the value of is equal to | | | | | | | |
|  | a) |  | b) | Zero | c) |  | d) |  |
| 69. | Ifthenis equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 70. | The number of solutions of the equation is | | | | | | | |
|  | a) | 2 | b) | 3 | c) | 1 | d) | 0 |
| 71. | If we consider only the principal values of the inverse trigonometric functions, then the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 72. | If wherethen is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 73. | Complete solution set of where denotes the greatest integer function, is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 74. | There exists a positive real number satisfying Then the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 75. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 76. | The number of real solutions of the equation is | | | | | | | |
|  | a) | One | b) | Two | c) | Zero | d) | Infinite |
| 77. | The number of real solutions of is | | | | | | | |
|  | a) | Zero | b) | One | c) | Two | d) | Infinite |
| 78. | If then the value of  is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 79. | If , then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 80. | The value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 81. | For the equation the number of real solution is | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 0 | d) |  |
| 82. | The principal value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 83. | The range of values of for which the equation has a solution is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 84. | If then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 85. |  | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 3 | d) |  |
| 86. | The maximum value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 87. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 88. | The values of satisfying the equation is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | No finite value |
| 89. | If then is equal to | | | | | | | |
|  | a) | 1 | b) |  | c) |  | d) | None of these |
| 90. | If andis a constant, then is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 91. | If then the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 92. | The principal value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 93. | The value of is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 94. | The least and the greatest values of are | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| 95. | The number of real solutions of the equation is | | | | | | | |
|  | a) | 0 | b) | 1 | c) | 2 | d) | Infinite |
| 96. | Which of the following is the solution set of the equation | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 97. | The value of is | | | | | | | |
|  | a) | 2 | b) |  | c) |  | d) |  |
| 98. | Sum of roots of the equation is | | | | | | | |
|  | a) | 3/2 | b) | 1 | c) | 1/2 | d) | 2 |
| 99. | If , then  is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 100. | The equationhas | | | | | | | |
|  | a) | One negative solution | | | b) | One positive solution | | |
|  | c) | No solution | | | d) | More than one solution | | |
| 101. | If and thenwill be | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

**Multiple Correct Answers Type**

| 102. | If the equation has exactly two solutions, then cannot have the integral value | | | | | | | |
|  | a) |  | b) | 0 | c) | 1 | d) | 2 |
| 103. | The value (s) of satisfying the equation is/are given by ( is any integer) | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 104. | If is independent ofthen | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 105. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 106. | Which one of the following quantities is/are positive? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 107. | Equation is satisfied by | | | | | | | |
|  | a) | Exactly one value of | | | b) | Exactly two values of | | |
|  | c) | Exactly one value of | | | d) | Exactly two values of | | |
| 108. | If and then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 109. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 110. | If the equation has exactly two solutions, then cannot have the integral value | | | | | | | |
|  | a) |  | b) | 0 | c) | 1 | d) | 2 |
| 111. | If are the roots of the equation then which of the following are real? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) | Both and | | |
| 112. | If then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 113. | If then | | | | | | | |
|  | a) | has the least value of | | | b) | has the greatest value of | | |
|  | c) | has the least value of | | | d) | has the greatest value of | | |
| 114. | The value of such that the length of the longest interval in which the function is constant is is/are | | | | | | | |
|  | a) | 8 | b) | 4 | c) | 12 | d) | 16 |
| 115. | If where then the possible values ofis (are) | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 116. | If , then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 117. | Which of the following is a rational number? | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 118. | Which of the following quantities is/are positive? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 119. | Ifandare the roots of then | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 120. | If thencan be | | | | | | | |
|  | a) | 3 | b) | 2 | c) | 4 | d) | 8 |
| 121. | If then is infinite, if | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 122. | Which of the following is/are the value of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 123. | The value (s) of satisfying the equation is/are given by ( is any integer) | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 124. | Ifthen | | | | | | | |
|  | a) |  | | | | | | | |
|  | b) |  | | | | | | | |
|  | c) |  | | | | | | | |
|  | d) |  | | | | | | | |
| 125. | If is a real number for which is defined, then a possible value of (where denotes the greatest integer function) is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 126. | Ifis defined, then which of the following value/values is/are in its range? | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 127. | Indicate the relation which can hold in their respective domain for infinite values of | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 128. | is equal to | | | | | | | |
|  | a) |  | | | b) |  | | |
|  | c) |  | | | d) |  | | |
| 129. | To the equation has only one real root, then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 130. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 131. | Ifterms, then | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 132. | If then is infinite, if | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| 133. | If, then | | | | | | | |
|  | a) | Has a maximum value of 2 | | | b) | Has a minimum value of 0 | | |
|  | c) | 16 different are possible | | | d) | Has a minimum value of | | |
| 134. | is equal to | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| **Assertion - Reasoning Type** | | | |
| This section contain(s) 0 questions numbered 135 to 134. Each question containsstatement 1(Assertion) and statement 2(Reason). Each question has the 4 choices (a), (b), (c) and (d) out of which **only one** is correct. | | | |
|  | a) | Statement 1 is True, Statement 2 is True; Statement 2 **is** correct explanation for Statement 1 | |
|  | b) | Statement 1 is True, Statement 2 is True; Statement 2 **is not** correct explanation for Statement 1 | |
|  | c) | Statement 1 is True, Statement 2 is False | |
|  | d) | Statement 1 is False, Statement 2 is True | |

|  |  |  |  |
| --- | --- | --- | --- |
| 135 |  | | |
|  | **Statement 1:** | | is equal to |
|  | **Statement 2:** | | if |

|  |  |  |  |
| --- | --- | --- | --- |
| 136 |  | | |
|  | **Statement 1:** | | The equation has unique solution |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 137 |  | | |
|  | **Statement 1:** | | is equal to |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 138 |  | | |
|  | **Statement 1:** | | The solution of system of equation and |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 139 |  | | |
|  | **Statement 1:** | | The solution of system of equation and |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 140 |  | | |
|  | **Statement 1:** | | Principal value of can be 3 if we restrict the domain of to |
|  | **Statement 2:** | | The restriction that the principal values of is is a matter of convention. We could have allowed principal values without affection the condition required for definition of inverse function |

|  |  |  |  |
| --- | --- | --- | --- |
| 141 |  | | |
|  | **Statement 1:** | | The value of |
|  | **Statement 2:** | | If then |

|  |  |  |  |
| --- | --- | --- | --- |
| 142 |  | | |
|  | **Statement 1:** | | Range of is |
|  | **Statement 2:** | | , for |

|  |  |  |  |
| --- | --- | --- | --- |
| 143 |  | | |
|  | **Statement 1:** | |  |
|  | **Statement 2:** | | for |

|  |  |  |  |
| --- | --- | --- | --- |
| 144 |  | | |
|  | **Statement 1:** | |  |
|  | **Statement 2:** | | if |

|  |  |  |  |
| --- | --- | --- | --- |
| 145 |  | | |
|  | **Statement 1:** | | If |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 146 |  | | |
|  | **Statement 1:** | | If |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 147 |  | | |
|  | **Statement 1:** | | Number of roots of the equation is zero |
|  | **Statement 2:** | | Range of and isandrespectively |

|  |  |  |  |
| --- | --- | --- | --- |
| 148 |  | | |
|  | **Statement 1:** | | only |
|  | **Statement 2:** | | Sum of two negative angles cannot be positive |

|  |  |  |  |
| --- | --- | --- | --- |
| 149 |  | | |
|  | **Statement 1:** | | is equal to |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 150 |  | | |
|  | **Statement 1:** | |  |
|  | **Statement 2:** | | For |

|  |  |  |  |
| --- | --- | --- | --- |
| 151 |  | | |
|  | **Statement 1:** | | Principal value of is |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 152 |  | | |
|  | **Statement 1:** | | The equation has unique solution |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 153 |  | | |
|  | **Statement 1:** | | If and then |
|  | **Statement 2:** | | for all |

|  |  |  |  |
| --- | --- | --- | --- |
| 154 |  | | |
|  | **Statement 1:** | | If and then |
|  | **Statement 2:** | | for all |

|  |  |  |  |
| --- | --- | --- | --- |
| 155 | Let | | |
|  | **Statement 1:** | |  |
|  | **Statement 2:** | |  |

|  |  |  |  |
| --- | --- | --- | --- |
| 156 |  | | |
|  | **Statement 1:** | | is equal to |
|  | **Statement 2:** | | if |

|  |  |  |  |
| --- | --- | --- | --- |
| 157 |  | | |
|  | **Statement 1:** | | The value of |
|  | **Statement 2:** | | If then |

|  |  |  |  |
| --- | --- | --- | --- |
| 158 |  | | |
|  | **Statement 1:** | | Domain of and is |
|  | **Statement 2:** | | andare unbounded functions |

|  |  |  |  |
| --- | --- | --- | --- |
| 159 |  | | |
|  | **Statement 1:** | | only |
|  | **Statement 2:** | | Sum of two negative angles cannot be positive |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Matrix-Match Type** | | | | | | | | | |
| This section contain(s) 0 question(s). Each question contains Statements given in 2 columns which have to be matched. Statements (A, B, C, D) in **columns I** have to be matched with Statements (p, q, r, s) in **columns II**. | | | | | | | | | |

| 160. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | |  | |
|  | **(B)** |  | | (q) | |  | |
|  | **(C)** |  | | (r) | |  | |
|  | **(D)** |  | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | q | r,s | p | q |  |  |
|  | **b)** | q,r,s | q | r,s | p |  |  |
|  | **c)** | p | q,r,s | q | r,s |  |  |
|  | **d)** | r,s | p | q,r,s | q |  |  |

| 161. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | Range of is | | (p) | |  | |
|  | **(B)** | Range of is | | (q) | |  | |
|  | **(C)** | Range of is | | (r) | |  | |
|  | **(D)** | Range of is | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | p | q | r | s |  |  |
|  | **b)** | r | s | p | q |  |  |
|  | **c)** | q | r | s | p |  |  |
|  | **d)** | s | p | q | r |  |  |

| 162. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** |  | | (p) | |  | |
|  | **(B)** |  | | (q) | |  | |
|  | **(C)** | If and, then the value ofis | | (r) | |  | |
|  | **(D)** |  | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | q | s | p | r |  |  |
|  | **b)** | s | r | q | p |  |  |
|  | **c)** | p | q | r | s |  |  |
|  | **d)** | r | p | s | q |  |  |

| 163. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | for | | (p) | |  | |
|  | **(B)** | for | | (q) | |  | |
|  | **(C)** | for | | (r) | |  | |
|  | **(D)** | , for | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | P,r | q,r,s | q | r |  |  |
|  | **b)** | q | r | p,r | q,r,s |  |  |
|  | **c)** | r | q | q,r,s | p,r |  |  |
|  | **d)** | q,r,s | p,r | r | q |  |  |

| 164. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | can be | | (p) | |  | |
|  | **(B)** | can be | | (q) | |  | |
|  | **(C)** | can be | | (r) | |  | |
|  | **(D)** | can be | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | Q,r,s | p,r | p,q | q |  |  |
|  | **b)** | q | p,q | p,r | q,r,s |  |  |
|  | **c)** | p,q | q | q,r,s | p,r |  |  |
|  | **d)** | p,r | q,r,s | q | p,q |  |  |

| 165. |  | | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Column-I** | | | **Column- II** | | | |
|  | **(A)** | , thencan take values | | (p) | |  | |
|  | **(B)** | , thencan take values | | (q) | |  | |
|  | **(C)** | , thencan take values | | (r) | |  | |
|  | **(D)** | , thencan take values | | (s) | |  | |
|  | **CODES :** | | | | | | | |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  | **A** | **B** | **C** | **D** |  |  |
|  | **a)** | p | q,s | r,s | r,s |  |  |
|  | **b)** | r,s | p | q,s | r,s |  |  |
|  | **c)** | q,s | r,s | p | q |  |  |
|  | **d)** | q | q,s | q,s | r,s |  |  |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Linked Comprehension Type**  This section contain(s) 15 paragraph(s) and based upon each paragraph, multiple choice questions have to be answered. Each question has atleast 4 choices (a), (b), (c) and (d) out of which **only one** is correct.  **Paragraph for Question Nos. 166 to -166** | | | | | | | | |
| r=1ntan-1x1-rr-11+xr-1xr=r=1n(tan-1xr-tan-1xr-1)=tan-1xn-tan-1x0, ∀n∈NOn the basis of above information, answer the following questions: | | | | |

| 166. | The sum to infinite terms of the series | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 167 to - 167** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| fx=sin{cot-1(x+1)}-cos⁡(tan-1x)And a=costan-1sincot-1xOn the basis of above information, answer the following question: | | | | |

| 167. | The value of for which is | | | | | | | |
|  | a) |  | b) | 0 | c) |  | d) | 1 |
| **Paragraph for Question Nos. 168 to - 168** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| r=1ntan-1x1-rr-11+xr-1xr=r=1n(tan-1xr-tan-1xr-1)=tan-1xn-tan-1x0, ∀n∈NOn the basis of above information, answer the following questions: | | | | |

| 168. | The sum to infinite terms of the series | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |
| **Paragraph for Question Nos. 169 to - 169** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| fx=sin{cot-1(x+1)}-cos⁡(tan-1x)And a=costan-1sincot-1xOn the basis of above information, answer the following question: | | | | |

| 169. | The value of for which is | | | | | | | |
|  | a) |  | b) | 0 | c) |  | d) | 1 |
| **Paragraph for Question Nos. 170 to - 170** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| For x,y, z,t∈R,sin-1x+cos-1y+sec-1z≥t2-2π t+3π | | | | |

| 170. | The value of is equal to | | | | | | | |
|  | a) | 1 | b) | 0 | c) | 2 | d) |  |
| **Paragraph for Question Nos. 171 to - 171** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| ax+b sectan-1x=c and ay+b sectan-1y=c | | | | |

| 171. | The value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) | None of these |
| **Paragraph for Question Nos. 172 to - 172** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Consider the system of equations cos-1x+sin-1y2=pπ24 and cos-1xsin-1y2=π416, p∈Z | | | | |

| 172. | The value of for which system has a solution is | | | | | | | |
|  | a) | 1 | b) | 2 | c) | 0 | d) |  |
| **Paragraph for Question Nos. 173 to - 173** | | | | | | | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Let cos-14x3-3x=a+bcos-1x | | | | |

| 173. | Ifthen the value of is | | | | | | | |
|  | a) |  | b) |  | c) |  | d) |  |

**Integer Answer Type**

| 174. | Ifthen the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 175. | Number of values of for which whereis \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 176. | If then the value of is | | | | | | | |
| 177. | Let beIf satisfies the equation then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 178. | If the area enclosed by the curves andin is (where and are coprime), then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 179. | Ifand then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 180. | Number of integral values of satisfying the equation is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 181. | The solution set of inequality  is then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 182. | If the roots of the equation are and Then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 183. | If range of the function is then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 184. | If the domain of the function is then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 185. | Absolute value of sum of all integers in the domain of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 186. | If is the number of terms of the series whose sum is then the value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |
| 187. | The least value of is \_\_\_\_\_\_\_\_\_\_ | | | | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 07-09-2019 **TEST ID: 599**

**Time :** 10:33:00 **MATHEMATICS**

**Marks :** 634

2.INVERSE TRIGONOMETRICE FUNCTIONS

|  |
| --- |
| **: ANSWER KEY :** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **1) c 2) d 3) a 4) b**  **5) d 6) a 7) b 8) b**  **9) c 10) d 11) a 12) d**  **13) b 14) c 15) b 16) b**  **17) d 18) b 19) b 20) d**  **21) d 22) a 23) d 24) b**  **25) c 26) b 27) c 28) a**  **29) d 30) a 31) b 32) c**  **33) a 34) d 35) b 36) b**  **37) c 38) a 39) c 40) c**  **41) d 42) c 43) c 44) d**  **45) c 46) c 47) c 48) d**  **49) a 50) c 51) d 52) b**  **53) d 54) c 55) b 56) a**  **57) d 58) a 59) c 60) b**  **61) c 62) c 63) d 64) a**  **65) a 66) a 67) b 68) c**  **69) b 70) c 71) d 72) a**  **73) d 74) c 75) b 76) c**  **77) c 78) c 79) b 80) d**  **81) c 82) e 83) b 84) a**  **85) b 86) d 87) d 88) d**  **89) c 90) d 91) d 92) c**  **93) c 94) c 95) c 96) a**  **97) b 98) a 99) c 100) b**  **101) c 1) a,c,d 2) a,b,c 3) a,b 4) a,d**  **5) a, b 6) a,c 7) a,d 8) a,b,d**  **9) a,c,d 10) b,c,d 11) a,d 12) a,d**  **13) b 14) c,d 15) a,c 16) a,b,c**  **17) a,b,c 18) a,b,d 19) a,c 20) a,b,c**  **21) b,c,d 22) a,b,c 23) a,b 24) a,c**  **25) b 26) a,b,c,d 27) a,d 28) b,c**  **29) a,b,d 30) a,b,d 31) a,b,c 32) a,c,d**  **33) a,b,c 1) d 2) a 3) d 4) a**  **5) a 6) a 7) a 8) d**  **9) a 10) c 11) d 12) d**  **13) a 14) a 15) d 16) a**  **17) d 18) a 19) d 20) d**  **21) a 22) d 23) a 24) b**  **25) a 1) b 2) d 3) a 4) b**  **5) c 6) a 1) a 2) a 3) a 4) a**  **5) d 6) b 7) b 8) c**  **1) 2 2) 3 3) 9 4) 3**  **5) 1 6) 9 7) 1 8) 5**  **9) 6 10) 4 11) 7 12) 3**  **13) 6 14) 1** | | | | |

**ACTIVE SITE TUTORIALS**

**Date :** 07-09-2019 **TEST ID: 599**

**Time :** 10:33:00 **MATHEMATICS**

**Marks :** 634

2.INVERSE TRIGONOMETRICE FUNCTIONS

|  |
| --- |
| **: HINTS AND SOLUTIONS :** |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | **(c)**  Let  and | | | | | | | |
| 2 | **(d)** | | | | | | | |
| 3 | **(a)** | | | | | | | |
| 4 | **(b)**  Since | | | | | | | |
| 5 | **(d)** | | | | | | | |
| 6 | **(a)** | | | | | | | |
| 7 | **(b)**  Letand, where  Now | | | | | | | |
| 8 | **(b)**  We have | | | | | | | |
| 9 | **(c)** | | | | | | | |
| 10 | **(d)**  for which and are not defined | | | | | | | |
| 11 | **(a)**  Expanding, we have | | | | | | | |
| 12 | **(d)** | | | | | | | |
| 13 | **(b)** | | | | | | | |
| 14 | **(c)**  Now | | | | | | | |
| 15 | **(b)**  The given equation is  Now,  So, we have | | | | | | | |
| 16 | **(b)**  Let  Thus | | | | | | | |
| 17 | **(d)**  Given | | | | | | | |
| 18 | **(b)**  and  For  is a solution  For  Therefore, is a solution and sum of the solutions | | | | | | | |
| 19 | **(b)** | | | | | | | |
| 20 | **(d)**  We have | | | | | | | |
| 21 | **(d)** | | | | | | | |
| 22 | **(a)**  We have | | | | | | | |
| 23 | **(d)** | | | | | | | |
| 24 | **(b)**  We have | | | | | | | |
| 25 | **(c)** | | | | | | | |
| 26 | **(b)** | | | | | | | |
| 27 | **(c)**  Given equation is | | | | | | | |
| 28 | **(a)** | | | | | | | |
| 29 | **(d)**  Given that  Hence, | | | | | | | |
| 30 | **(a)**  Letwhere  Let | | | | | | | |
| 31 | **(b)**  If, thenbut is always positive  So, | | | | | | | |
| 32 | **(c)**  or | | | | | | | |
| 33 | **(a)**  Letand  and (i)  (ii)  Let  Then | | | | | | | |
| 34 | **(d)**  Now  Now for, we have  Similarly, for we get | | | | | | | |
| 35 | **(b)**  Given that  The range of the function is [as both functions are increasing]  Therefore, the integral values of are and | | | | | | | |
| 36 | **(b)** | | | | | | | |
| 37 | **(c)**  [as is a decreasing function]  maximum value of is 5 | | | | | | | |
| 38 | **(a)**  We have  For | | | | | | | |
| 39 | **(c)** | | | | | | | |
| 40 | **(c)**  We have | | | | | | | |
| 41 | **(d)**  Given that  Squaring both sides, we get  Put so that | | | | | | | |
| 42 | **(c)**  As  (i)  (ii)  Hence, from Eqs. (i) and (ii), | | | | | | | |
| 43 | **(c)**  So | | | | | | | |
| 44 | **(d)**  For  and no solution in the given range  Alsoand | | | | | | | |
| 45 | **(c)** | | | | | | | |
| 46 | **(c)**  Range of the right-hand angle is | | | | | | | |
| 47 | **(c)**  clearly domain of is  Thus, the range is | | | | | | | |
| 48 | **(d)**  Given, | | | | | | | |
| 49 | **(a)** | | | | | | | |
| 50 | **(c)**  Put  doses not satisfy the given equation] | | | | | | | |
| 51 | **(d)**  We have  Squaring, we get | | | | | | | |
| 52 | **(b)** | | | | | | | |
| 53 | **(d)** | | | | | | | |
| 54 | **(c)**  Now | | | | | | | |
| 55 | **(b)** | | | | | | | |
| 56 | **(a)** | | | | | | | |
| 57 | **(d)**  Since for | | | | | | | |
| 58 | **(a)** | | | | | | | |
| 59 | **(c)** | | | | | | | |
| 60 | **(b)**  Obviously, and | | | | | | | |
| 61 | **(c)** | | | | | | | |
| 62 | **(c)**  Let Then where  Now, | | | | | | | |
| 63 | **(d)** | | | | | | | |
| 64 | **(a)**  Therefore, the required value | | | | | | | |
| 65 | **(a)** | | | | | | | |
| 66 | **(a)**  Let , where, then  Now | | | | | | | |
| 67 | **(b)** | | | | | | | |
| 68 | **(c)**  Let  Put . As and | | | | | | | |
| 69 | **(b)**  Let where  Then | | | | | | | |
| 70 | **(c)** | | | | | | | |
| 71 | **(d)** | | | | | | | |
| 72 | **(a)**  Put | | | | | | | |
| 73 | **(d)**  or  Now  Therefore, for  No such exists  Thus, the solution set is | | | | | | | |
| 74 | **(c)**  Let  Now | | | | | | | |
| 75 | **(b)** | | | | | | | |
| 76 | **(c)**  Since  and  Adding, we have  Therefore, the given equation has no solution | | | | | | | |
| 77 | **(c)**  are the only real solutions | | | | | | | |
| 78 | **(c)**  From the given equation , we get  Possible solution is when | | | | | | | |
| 79 | **(b)** | | | | | | | |
| 80 | **(d)** | | | | | | | |
| 81 | **(c)**  We have which is not possible as and never take negative values | | | | | | | |
| 82 | **(e)**  The principal value of principal value of | | | | | | | |
| 83 | **(b)**  For | | | | | | | |
| 84 | **(a)**  Let then | | | | | | | |
| 85 | **(b)**  The given equation can be written as | | | | | | | |
| 86 | **(d)**  As [using A.M. G.M.] | | | | | | | |
| 87 | **(d)** | | | | | | | |
| 88 | **(d)**  not possible as  which is also not possible as for this but | | | | | | | |
| 89 | **(c)**  We have | | | | | | | |
| 90 | **(d)**  Now  and  Hence,  Given,we have | | | | | | | |
| 91 | **(d)**  Let and  and  Therefore, and  The given equation may be written as | | | | | | | |
| 92 | **(c)** | | | | | | | |
| 93 | **(c)** | | | | | | | |
| 94 | **(c)**  We have  So, the least value is when  And the greatest value occurs when  Therefore, the greatest value is | | | | | | | |
| 95 | **(c)**    From the graph, number of solutions is 2 | | | | | | | |
| 96 | **(a)**  Put and (i)  if(ii)  From Eqs. (i) and (ii), we get | | | | | | | |
| 97 | **(b)**  Therefore, the required value | | | | | | | |
| 98 | **(a)**  . Also  and | | | | | | | |
| 99 | **(c)** | | | | | | | |
| 100 | **(b)** | | | | | | | |
| 101 | **(c)** | | | | | | | |
| 102 | **(a,c,d)**  The given equation holds, if  And  and  and  is one solution and for another different solution  so only integral value can have is 0. | | | | | | | |
| 103 | **(a,b,c)**  The solution of  if  [in the interval  But is periodic with period  Again, if | | | | | | | |
| 104 | **(a,b)**  We know that  if then  if  if  Hence, the required values are or | | | | | | | |
| 105 | **(a,d)**  We have,  Since,  [from Eq.(i)] | | | | | | | |
| 106 | **(a, b)**  **a**.  **b**.  **c**.  **d**. | | | | | | | |
| 107 | **(a,c)**  Given equation is Sinceis real  Putting value of in the original equation, we have  Hence, the equation has only one solution | | | | | | | |
| 108 | **(a,d)**  For the given equation  Also  (i)  Again  where  (ii)  From Eqs. (i) and (ii), we get | | | | | | | |
| 109 | **(a,b,d)**  Now ,2  Since,  Let then  Also, | | | | | | | |
| 110 | **(a,c,d)**  The given equation holds, if  And  and  and  is one solution and for another different solution  so only integral value can have is 0. | | | | | | | |
| 111 | **(b,c,d)**  For is not defined as domain of is and is not defined as domain of is However, is defined for both of these values as domain of is | | | | | | | |
| 112 | **(a,d)**  We have,  Since,  [from Eq.(i)] | | | | | | | |
| 113 | **(a,d)**  Let  Now, | | | | | | | |
| 114 | **(b)**  Let  is periodic with period and is constant in the continuous interval  (where and  Sois constant in the interval | | | | | | | |
| 115 | **(c,d)**  or | | | | | | | |
| 116 | **(a,c)**  The given relation is possible when  Also, and  there are infinitely many solutions | | | | | | | |
| 117 | **(a,b,c)**  (a)  (b)  (c)  Let  We have  Now  (d)  which is irrational | | | | | | | |
| 118 | **(a,b,c)**  **a.**  **b**.  **c**.  **d.** | | | | | | | |
| 119 | **(a,b,d)** | | | | | | | |
| 120 | **(a,c)**  We have  (i)  Since nearly, | | | | | | | |
| 121 | **(a,b,c)**  If we put then given equality becomes  So that is infinite, if | | | | | | | |
| 122 | **(b,c,d)**  Hence | | | | | | | |
| 123 | **(a,b,c)**  The solution of  if  [in the interval  But is periodic with period  Again, if | | | | | | | |
| 124 | **(a,b)** | | | | | | | |
| 125 | **(a,c)**  Domain of is  or | | | | | | | |
| 126 | **(b)**  We know that is defined for and is defined for  Hence, the given function is defined for  Therefore, | | | | | | | |
| 127 | **(a,b,c,d)**  Since  Also | | | | | | | |
| 128 | **(a,d)**  **Case 1:** If then  **Case 2:** If, then | | | | | | | |
| 129 | **(b,c)**  Hence, 2 should lie between or on the roots of where | | | | | | | |
| 130 | **(a,b,d)**  Now ,2  Since,  Let then  Also, | | | | | | | |
| 131 | **(a,b,d)**  Let denote the term of the series and  Let  Thus, the sum of the first terms of the given series is | | | | | | | |
| 132 | **(a,b,c)**  If we put then given equality becomes  So that is infinite, if | | | | | | | |
| 133 | **(a,c,d)**  or  or  Hence, the maximum value of and minimum value  Also, there are 16 different determinants as each place value is either or | | | | | | | |
| 134 | **(a,b,c)**  Let | | | | | | | |
| 135 | **(d)**  In statement II, put  LHS= | | | | | | | |
| 136 | **(a)**  Statement II is true.  Given,  And from statement II  Adding Eqs. (i) and (ii), we get  Given equation has unique solution.  Statement I is true. | | | | | | | |
| 137 | **(d)** | | | | | | | |
| 138 | **(a)**  Thus , we conclude that the only value of that satisfies all conditions is  Then ,  Also , | | | | | | | |
| 139 | **(a)**  Thus , we conclude that the only value of that satisfies all conditions is  Then ,  Also , | | | | | | | |
| 141 | **(a)**  Both statement I and statement II are true and statement II is correct explanation of statement I. | | | | | | | |
| 142 | **(d)**  Obviously, statement 2 is correct, but when ] we have  It implies that  Hence, statement 2 is true but statement 1 is false | | | | | | | |
| 143 | **(a)**  Therefore, statement 2 is true  Now,  By statement 2, we have  Therefore, statement 1 is true | | | | | | | |
| 144 | **(c)**  and  But statement 2 is false | | | | | | | |
| 145 | **(d)**  If  Statement I is false but statement II is true | | | | | | | |
| 146 | **(d)**  If  Statement I is false but statement II is true | | | | | | | |
| 147 | **(a)**  Statement 2 is correct, from which we can say is not possible. Hence, both the statements are correct and statement 2 is the correct explanation of statement 1 | | | | | | | |
| 148 | **(a)**  But sum of two negative number cannot be  the only solution | | | | | | | |
| 149 | **(d)** | | | | | | | |
| 150 | **(a)**  For  (i)  Now, in Eq. (i), putting, we get  Hence, both the statements are correct and statement 2 is the correct explanation of statement 1 | | | | | | | |
| 151 | **(d)**  is true but it is not principal value of as  Hence, statement 2 is true but statement 1 is false | | | | | | | |
| 152 | **(a)**  Statement II is true.  Given,  And from statement II  Adding Eqs. (i) and (ii), we get  Given equation has unique solution.  Statement I is true. | | | | | | | |
| 153 | **(d)**  Since , therefore  And  Since,  And since and <0  On adding Eqs. (i), (ii) and (iii), we get | | | | | | | |
| 154 | **(d)**  Since , therefore  And  Since,  And since and <0  On adding Eqs. (i), (ii) and (iii), we get | | | | | | | |
| 155 | **(a)**  Thus statement 1 is true, statement 2 is true and statement 2 is the correct explanation of statement 1 | | | | | | | |
| 156 | **(d)**  In statement II, put  LHS= | | | | | | | |
| 157 | **(a)**  Both statement I and statement II are true and statement II is correct explanation of statement I. | | | | | | | |
| 158 | **(b)**  We know that and have domain also and are unbounded functions. On the other hand, is an unbounded function, but its range is and not | | | | | | | |
| 159 | **(a)**  But sum of two negative number cannot be  the only solution | | | | | | | |
| 160 | **(b)**  **a**.  and  **b**.  **c**.  and  and  and  **d**.  and  or and  oror | | | | | | | |
| 161 | **(d)**  **a.**  For  **b**.  where  Now  **c**.  where  **d**. where  , where  Hence, | | | | | | | |
| 162 | **(a)**  **a**.  and  **b**.  **c**. and  Now  **d**. | | | | | | | |
| 163 | **(b)**      Refer graph for solution | | | | | | | |
| 164 | **(c)**  and | | | | | | | |
| 165 | **(a)**  **a**.  **b**.  **c**.  **d**. | | | | | | | |
| 166 | **(a)** | | | | | | | |
| 167 | **(a)**  Since, | | | | | | | |
| 168 | **(a)** | | | | | | | |
| 169 | **(a)**  Since, | | | | | | | |
| 170 | **(d)**  Also,  The given inequation exists if equality holds, i.e.,  and | | | | | | | |
| 171 | **(b)**  Given and  Let and then the given relations are  and  From these two relations, we can conclude that equation has roots and  Therefore, sum of the roots,  and the product of roots  and | | | | | | | |
| 172 | **(b)**  Let  and  We have (i)  and (ii)  Sincewe get  So, from Eq.(i) we get  Sincesoor  Substituting the value of from Eq. (i) in Eq. (ii), we get  Since  Substituting in Eq. (iii), we get  From Eq.(ii), we get | | | | | | | |
| 173 | **(c)**  Let where  where  Refer the graph of    From the graph,  For  and  For  and  For and | | | | | | | |
| 174 | **(2)**  Since defined for | | | | | | | |
| 175 | **(3)**  or  or  Therefore, the number of values is equal to 3 | | | | | | | |
| 176 | **(9)** | | | | | | | |
| 177 | **(3)** | | | | | | | |
| 178 | **(1)**  We have    Both the curves bound the regions of same area inand so on  Therefore, the required are = area of shaded square  and | | | | | | | |
| 179 | **(9)** | | | | | | | |
| 180 | **(1)**  or | | | | | | | |
| 181 | **(5)**  [as is a decreasing function]  Hence | | | | | | | |
| 182 | **(6)**  Let | | | | | | | |
| 183 | **(4)**  Domain of is  Also is an increasing function in the domain  and  Therefore, the range of is  Hence, | | | | | | | |
| 184 | **(7)**  is defined  If (i)  Also, (ii)  Therefore, from Eqs. (i) and (ii), we have domain: | | | | | | | |
| 185 | **(3)**  We must have  or (i)  Also,  (ii)  From Eqs. (i) and (ii), we get  Hence, required sum is 3 | | | | | | | |
| 186 | **(6)**  Hence, | | | | | | | |
| 187 | **(1)**  Given expression is defined only for and  and  Hence, the least value is 1 | | | | | | | |