Solution of trigonometrical equations

1. If then the general value of is
[MNR 1987; IIT 1981; Karnataka CET 2000, 03; DCE 2000]

(a) (b)

(c) (d) None of these

2. If then the most general value of is
[MNR 1973; MP PET 1984, 90]

(a) (b)

(c) (d)

3. If , then the general value of is
[MP PET 1988]

(a) (b)

(c) (d)

4. General solution of the equation is

(a) (b)

(c) (d) None of these

5. If then the most general value of is
[MP PET 1991, 2002; UPSEAT 1999]

(a) (b)

(c) (d)

6. If then the general value of is
[MP PET 1984]

(a) (b)

(c) (d)

7. If then the general value is
[MP PET 1989]

(a) (b)

(c) (d)

8. If then the general value of is
[MP PET 1989]

(a) (b)

(c) (d)

9. If , then the general values of are

(a) (b)

(c) (d)

10. If , then the general value of is

(a) (b)

(c) (d)

11. If , then the general value of is
[Roorkee 1980; Karnataka CET 1992, 93, 2003]

(a) (b)

(c) (d) None of these

12. If , then the general value of is
[Roorkee 1981]

(a) (b)

(c) (d) None of these

13. If , then the general value of is

(a) (b)

(c) (d)

14. If , then the general value of is

(a) (b)

(c) (d)

15. If , then the general value of is

(a) (b)

(c) (d)

16. If , then the general value of is

(a) (b)

(c) (d) None of these

17. If , then the general value of is

(a) (b)

(c) (d)

18. If , the general value of is **[Roorkee 1971]**

(a) (b)

(c) (d)

19. If , then the general value of is

(a) (b)

(c) (d)

20. The most general value of satisfying the equations and is **[IIT 1971; Karnataka CET 1993; DCE 1999]**

(a) (b)

(c) (d)

21. If , then the general value of is

(a) (b)

(c) (d)

22. If , then the general value of is

(a) (b)

(c) (d)

23. If , then the general value of is

(a) (b)

(c) (d)

24. If , then the general value of will be in **[Pb. CET 2002]**

(a) A. P. (b) G. P.

(c) H. P. (d) None of these

25. If , then the general value of is

(a) (b)

(c) (d)

26. If , then the general value of is

(a) (b)

(c) (d)

27. If , then the general value of is

(a) (b)

(c) (d)

28. The solution of is

(a) (b)

(c) (d)

29. The general value of satisfying the equation , is **[MNR 1974]**

(a) (b)

(c) (d)

30. If , then the value of is **[Roorkee 1977]**

(a) (b)

(c) (d) None of these

31. The general solution of the trigonometric equation is **[MP PET 1994]**

(a) (b)

(c) (d)

32. The solution of the equation is **[Roorkee 1994]**

(a) (b)

(c) (d) None of these

33. If , then **[MP PET 1995]**

(a) (b)

(c) (d) None of these

34. The solution of the equation **[AI CBSE 1983]**

(a) (b)

(c) (d) None of these

35. If then

(a) (b)

(c) (d)

36. If then **[Pb. CET 1988]**

(a) (b)

(c) (d)

37. The general value of satisfying the equation is **[Roorkee 1993]**

(a) (b)

(c) (d)

38. The general solution of the equation is **[Roorkee 1992]**

(a) (b)

(c) (d)

39. The general solution of is **[Karnataka CET 1991]**

(a) (b)

(c) (d)

40. The general solution of is

(a)

(b)

(c)

(d)

41. General value of satisfying the equation is **[IIT 1996]**

(a) (b)

(c) (d) None of these

(Where m and n are integers)

42. The general value is obtained from the equation is **[MP PET 1996]**

(a) (b)

(c) (d)

43. then **[MP PET 1999; Pb. CET 2000]**

(a) or (b) or

(c) or (d) None of these

44. The general value of satisfying is **[AMU 1996, 99]**

(a) (b)

(c) (d)

45. General solution of is **[Karnataka CET 2000; Pb. CET 2001]**

(a) (b)

(c) (d)

46. The equation is satisfied, if **[UPSEAT 2001]**

(a) (b)

(c) (d)

47. If , then the general value of is **[UPSEAT 2003]**

(a) (b)

(c) (d)

48. The general value of in the equation , is **[MP PET 2003]**

(a) (b)

(c) (d)

49. If , then B = **[EAMCET 2003]**

(a) (b)

(c) (d)

50. If and is an acute angle, then is equal to **[EAMCET 1980]**

(a) (b)

(c) 0 (d) None of these

51. If then x = **[Roorkee 1989]**

(a) (b)

(c) (d) None of these

52. If , then (where)

(a) (b)

(c) (d) None of these

53. The solution of the equation , is **[AMU 2002]**

(a) (b)

(c) (d)

54. The set of values of x for which the expression , is **[MP PET 1992; MNR 1993; UPSEAT 2002]**

(a) (b)

(c) (d)

55. If then **[UPSEAT 2001]**

(a) (b)

(c) (d) None of these

56. The roots of the equation is **[Orissa JEE 2004]**

(a) (b)

(c) (d) None of these

57. If , then the general value of is **[MP PET 2004; Orissa JEE 2004]**

(a) (b)

(c) (d)

58. If , then x = **[MP PET 1986]**

(a) (b)

(c) (d)

59. The equation has **[EAMCET 1986; MP PET 1998; Pb. CET 1993]**

(a) One solution
(b) Two solutions
(c) Infinite number of solutions
(d) No solutions

60. The number of values of in $[0, 2\pi]$ satisfying the equation are **[MP PET 1989]**

(a) 0 (b) 1
(c) 2 (d) 3

61. The equation has

(a) One solution (b) Two solutions

(c) Infinite solutions (d) No solutions

62. The number of solutions of the given equation where is

(a) 0 (b) 1

(c) 2 (d) 3

63. If , then the value of x other than 0 lying between is **[MNR 1985]**

(a) (b)

(c) (d)

64. One root of the equation lies in the interval **[Kurukshetra CEE 1996]**

(a) (b)

(c) (d)

65. If , where , then x = **[Roorkee 1978; IIT 1963]**

(a) (b)

(c) (d) None of these

66. The equation is solvable for

(a) (b)

(c) (d)

67. If and , then the number of different solutions of 3 is

(a) Zero (b) Two

(c) One (d) Infinite

68. The number of values of x in the interval [0, 5] satisfying the equation is **[IIT 1998; MP PET 2000; Pb. CET 2003]**

(a) 0 (b) 5

(c) 6 (d) 10

69. The equation has **[EAMCET 2001]**

(a) Only one solution (b) Two solutions

(c) Infinitely many solutions (d) No solution

70. The equation has **[Orissa JEE 2002]**

(a) Finite solution (b) Infinite solution

(c) One solution (d) No solution

71. The equation for , has **[Orissa JEE 2003]**

(a) One solution (b) Two sets of solutions

(c) Four sets of solutions (d) No solution

72. If , then the possible values of are

(a) (b)

(c) (d)

73. If where , then **[IIT 1963]**

(a) (b)

(c) (d) None of these

74. If , where , then =

(a) (b)

(c) (d)

75. Values of satisfying are **[EAMCET 1994]**

(a) (b)

(c) (d)

76. then **[ISM Dhanbad 1989]**

(a) (b)

(c) (d) None of these

77. The values of satisfying and are **[EAMCET 1990]**

(a) (b)

(c) (d)

78. The expression has the positive values for x, given by

(a) (b)

(c) For all (d)

79. If , then **[Roorkee 1984]**

(a) (b)

(c) (d)

80. If and , then the values of are

[Karnataka CET 2001]

(a) and (b) and

(c) and (d) and

81. If , then

[MNR 1988; UPSEAT 2000]

(a) (b)

(c) (d)

82. If and , then x =

[Karnataka CET 2004]

(a) (b)

(c) (d)

83. If , then **[MP PET 1992]**

(a) (b)

(c) (d)

84. The value of in between and and satisfying the equation is equal to **[Pb. CET 2002]**

(a) and (b) and

(c) and (d) and

85. The solution of equation lies in the interval **[UPSEAT 2004; IIT 1992]**

(a) (b)

(c) (d)

86. The number of solution of the equation , are **[UPSEAT 2004; IIT 1992]**

(a) No solution (b) One solution

(c) Two solutions (d) Infinitely many solutions

87. The most general value of satisfying the equations and is

[MNR 1982; Roorkee 1990; UPSEAT 2002; MP PET 2003]

(a) (b)

(c) (d) None of these

88. The most general value of which will satisfy both the equations and is

[MNR 1980; MP PET 1989; DCE 1995]

(a) (b)

(c) (d) None of these

89. Common roots of the equations and are

(a) (b)

(c) (d) None of these

90. If then

[Roorkee 1974]

(a) (b)

(c) (d)

91. If and , then the general value of is

(a) (b)

(c) (d)

92. If =1 and then the smallest positive values of A and B are

(a) (b)

(c) (d)

93. The smallest positive angle which satisfies the equation , is

[ISM Dhanbad 1972; MP PET 1993]

(a) (b)

(c) (d)

94. , n is integer), if

[BIT Ranchi 1991; Pb. CET 1991]

(a) and (b) and

(c) only (d) only

95. The value of satisfying the given equation = 2, is **[MNR 1981; EAMCET 1989]**

(a) (b)

(c) (d)

96. If is maximum, then the value of A is equal to

(a) (b)

(c) (d) None of these

97. If and , then the possible values of lying between and is

(a) and (b) and

(c) and (d) and

98. The only value of x for which holds, is

(a) (b)

(c) (d) All values of x

99. If , then =

[Karnataka CET 1993]

(a) (b)

(c) (d)

100. If then the value of =

[UPSEAT 1999]

(a) (b)

(c) (d)

101. If , then equals

[AMU 1999]

(a) (b)

(c) (d)

102. The value of lying between 0 and and satisfying the equation

[IIT 1988; MNR 1992; Kurukshetra CEE 1998; DCE 1996]

(a) or (b)

(c) (d) None of these

103. If cot then

[Kerala (Engg.) 2001]

(a) (b)

(c) (d)

104. If n is any integer, then the general solution of the equation is **[J & K 2005]**

(a) or

(b)

(c) or

(d) or

105. The general solution of , for any integer n is

[Karnataka CET 2005]

(a) (b)

(c) (d)

106. If , then the value of is

[Karnataka CET 2005]

(a) or 1 (b) or

(c) or (d)

Periodic functions

1. Period of is **[MP PET 1989]**

(a) (b)

(c) (d)

2. Period of is

(a) (b)

(c) (d) None of these

3. Period of is

(a) (b)

(c) (d)

4. Period of is

(a) (b)

(c) (d)

5. Period of is **[MP PET 1990]**

(a) (b)

(c) (d)

6. Period of is

(a) (b)

(c) (d)

7. Period of cot is

(a) (b)

(c) (d)

8. Period of is

(a) (b)

(c) (d)

9. The period of is **[RPET 1997]**

(a) (b)

(c) (d)

10. The period of the function is

[EAMCET 2001]

(a) (b)

(c) (d)

11. If the period of the function is , then n is equal to **[Pb. CET 2000]**

(a) 1 (b) 4

(c) 8 (d) 2

12. Period of is **[UPSEAT 2002; AIEEE 2002]**

(a) (b)

(c) (d) None of these

13. The period of the function is

[Kerala (Engg.) 2002]

(a) (b)

(c) (d)

14. Which of the following functions has period

[Pb. CET 2004]

(a)

(b)

(c)

(d) None of these

15. The period of the function is

[Orissa JEE 2004]

(a) (b)

(c) (d)

16. Let be periodic, then p must be

(a) Rational (b) Irrational

(c) Positive real number (d) None of these

17. The period of the function is

[EAMCET 1990]

(a) 4 (b) 6

(c) 12 (d) 24

18. The function is period with period **[EAMCET 1992; RPET 2001]**

(a) 6 (b) 3

(c) 4 (d) 12

19. The period of the function $|\sin \pi x|$ is **[AMU 1999]**

(a) (b)

(c) 2 (d) 1

20. The period of , is

[Orissa JEE 2002]

(a) (b)

(c) (d) None of these

Relation between sides and angles, Solutions of triangles

1. In a triangle ABC, and how many such triangles are possible **[Roorkee 1990]**

(a) 1 (b) 0

(c) 2 (d) Infinite

2. If in a triangle , then angle C is equal to **[MP PET 1986]**

(a) (b)

(c) (d)

3. In a , if and then x = **[MP PET 1992]**

(a) bc (b) ca

(c) ab (d) abc

4. If the angles of a triangle be in A.P., then

(a) (b)

(c) (d)

5. In triangle ,

[MP PET 1985]

(a) 0 (b) 1

(c) (d)

6. In [MP PET 1989]

(a) (b)

(c) (d) None of these

7. In [MP PET 1986]

(a) (b)

(c) (d)

8. In a , if , then

[MP PET 1991]

(a) 1 (b)

(c) 0 (d)

9. In a , if , then

[MP PET 1983, 89, 90]

(a) (b)

(c) (d) None of these

10. In =

[Roorkee 1988]

(a) (b)

(c) (d)

11. In if be in H. P. then a, b, c will be in

(a) A. P. (b) G. P.

(c) H. P. (d) None of these

12. In

(a) (b)

(c) (d) None of these

13. In if and then

[MP PET 1988]

(a) 3/4 (b) 1/4

(c) 1/2 (d) 1/3

14. In if then are in

(a) A. P. (b) G. P.

(c) H. P. (d) None of these

15. In [Roorkee 1973]

(a) (b)

(c) (d)

16. In

(a) (b)

(c) (d)

17. In a

[ISM Dhanbad 1973]

(a) 0 (b)

(c) (d)

18. In if be in A. P., then are in

[MP PET 1997]

(a) H. P. (b) G. P.

(c) A. P. (d) None of these

19. In if $=3ac$, then [AMU 1996]

(a) (b)

(c) (d)

20. In if

(a) 0 (b)

(c) (d) None of these

21. In

[MP PET 1986, 1995; Pb. CET 1990, 94]

(a) (b)

(c) 1 (d)

22. If then is [MP PET 1991]

(a) Equilateral (b) Right angled

(c) Isosceles (d) None of these

23. If the angles of a triangle be in the ratio 1 : 2 : 7, then the ratio of its greatest side to the least side is

(a) (b) 2 :1

(c) (d)

24. If in a triangle , then

[IIT 1975]

(a) (b)

(c) (d) None of these

25. In , if then are in

(a) A. P. (b) G. P.
(c) H. P. (d) None of these

26. In triangle if are in A. P., then the value of

[AMU 1995]

(a) 1 (b) 1/2
(c) 2 (d) –1

27. If then **[MP PET 1992, 2002]**

(a) (b)

(c) (d) None of these

28. In , if , then

[MP PET 1983]

(a) 4/5 (b) 3/20
(c) 24/25 (d) 1/50

29. If the sides of a triangle are in the ratio , then the largest angle of the triangle will be **[MP PET 1990]**

(a) (b)

(c) (d)

30. In a triangle ABC,

[Kerala (Engg.) 2002]

(a) (b)

(c) (d) None of these

31. If the lengths of the sides of a triangle be and *cm*, then the smallest angle is **[MNR 1985]**

(a) (b)

(c) (d)

32. If the sides of a right angled triangle be in A. P. , then their ratio will be

(a) 1: 2: 3 (b) 2 : 3 : 4
(c) 3: 4: 5 (d) 4 : 5 : 6

33. In a , if , and *cm*, then the triangle is **[MP PET 1986]**

(a) Right angled (b) Right angled isosceles
(c) Isosceles (d) Obtuse angled

34. In a ,side b is equal to **[MP PET 1984, 92]**

(a) (b)

(c) (d) None of these

35. In , if , , then the values of a and b are

(a) 10, 10 (b)

(c) (d)

36. In ,

(a) (b)

(c) (d)

37. In ,

(a) (b)

(c) (d)

38. In ,

(a) 0 (b) 1
(c) (d)

39. In triangle

(a) (b)

(c) (d)

40. In ,

[MP PET 1993; Roorkee 1973]

(a) (b)

(c) (d)

41. In ,

(a) 0 (b)

(c) (d)

42. If in , then

[UPSEAT 1999]

(a) (b)

(c) (d)

43. If the sides of a triangle are in A. P., then the cotangent of its half the angles will be in **[MP PET 1993]**

(a) H. P. (b) G . P.

(c) A. P. (d) No particular order

44. If the angles of a triangle are in the ratio 1: 2: 3, then their corresponding sides are in the ratio **[MP PET 1993; BIT Ranchi 1992; Pb. CET 1990]**

(a) 1 : 2 : 3 (b)

(c) (d)

45. In a triangle , , then the value of angle A is **[IIT 1993]**

(a) (b)

(c) (d)

46. If and satisfies then **[MP PET 1984]**

(a) (b)

(c) (d)

47. If in a triangle , , and then is **[MP PET 1983]**

(a) (b)

(c) (d)

48. If in a triangle, then its sides will be in **[MP PET 1982; AMU 2000; AIEEE 2003]**

(a) A. P. (b) G. P.

(c) H. P. (d) A. G.

49. If in a triangle the angles are in A. P. and , then is equal to **[IIT 1981; Kurukshetra CEE 1998; Pb. CET 1990]**

(a) (b)

(c) (d)

50. In , and , then angle A is **[MNR 1973; MP PET 1984, 2002]**

(a) (b)

(c) (d)

51. . **[Roorkee 1975]**

(a) (b)

(c) (d) None of these

52. If the angles of a triangle are in A.P. and the sides opposite to these angles are in G. P. then are in **[MP PET 1998]**

(a) A. P. (b) H. P.

(c) G. P. (d) None of these

53. If the sides of a triangle are p,q and , then the biggest angle is **[Kerala (Engg.) 2005]**

(a) (b)

(c) (d)

(e)

54. In a triangle , if , then the values of and are

(a) (b)

(c) (d) None of these

55. In , is equal to **[WB JEE 1989]**

(a) 0 (b) 1

(c) (d) 2

56. In a triangle if , then angle B is equal to

(a) or (b) or

(c) or (d) None of these

57. Area of the triangle is $sq.\ cm$, angle and its perimeter is 20 cm, then side c will be

(a) 5 (b) 7

(c) 8 (d) 10

58. In triangle if , then is equal to **[UPSEAT 1999]**

(a) (b)

(c) (d) None of these

59. The two adjacent sides of a cyclic quadrilateral are 2 and 5 and the angle between them is . If the third side is 3, the remaining fourth side is **[MNR 1994]**

(a) 2 (b) 3

(c) 4 (d) 5

60. In a triangle , . Then c is the root of the equation **[Roorkee 1993]**

(a) (b)

(c) (d)

61. If in , then C = **[EAMCET 1984]**

(a) (b)

(c) (d) None of these

62. If in , then B has

(a) One solution (b) Two solutions
(c) No solution (d) None of these

63. If and , then the number of triangle that can be constructed is **[Roorkee 1992]**

(a) Infinite (b) Two
(c) One (d) Nil

64. If are in A. P. then which of the following are also in A.P. **[ISM Dhandbad 1989]**

(a) (b)

(c) (d) None of these

65. The sides of a triangle are three consecutive natural numbers and its largest angle is twice the smallest one. Then the sides of the triangle are

(a) 1, 2, 3 (b) 2, 3, 4
(c) 3, 4, 5 (d) 4, 5, 6

66. If in a triangle then the sides are proportional to

(a) 1: 1: (b)

(c) (d) None of these

67. In a , and the side then area of the triangle is **[IIT Screening 1993; MP PET 2000]**

(a) 1 (b) 2

(c) (d)

68. The perimeter of a is 6 times the arithmetic mean of the sines of its angles. If the side a is 1, then the angle A is **[IIT Screening 1992; DCE 1999]**

(a) (b)

(c) (d)

69. Point D, E are taken on the side BC of a triangle such that .If , , , then the value of

(a) 1 (b) 2

(c) 4 (d) None of these

70. If in a , , then are in

(a) A. P. (b) H. P.
(c) G. P. (d) None of these

71. If in a , , then one angle must be exactly equal to

(a) (b)

(c) (d) None of these

72. ABC is a triangle such that . If A, B and C are in A.P., then A, B and C are

(a) (b)

(c) (d)

73. If in the , then

(a) 3 :1 (b) 2 : 1
(c) 1 : 2 (d) 1 : 3

74. In a triangle , if and , then b = **[Karnataka CET 1992]**

(a) (b)

(c) (d)

75. In triangle ABC, , then , where x = **[Karnataka CET 1990]**

(a) (b)

(c) (d) 1

76. In a , , then a =

(a) (b)

(c) (d) None of these

77. In a , and , then side c is equal to

(a) 6 (b) 7
(c) 9 (d) None of these

78. In a , if , then

(a) (b)

(c) (d) None of these

79. The smallest angle of the triangle whose sides are is **[EAMCET 1985]**

(a) (b)

(c) (d) None of these

80. If and in , then a =

(a) (b)

(c) (d) None of these

81. If angles of a triangle are in the ratio of 2 : 3: 7, then the sides are in the ratio of **[MP PET 1996]**

(a) (b)

(c) (d)

82. Sides of a triangle are and . The smallest angle of the triangle is

(a) (b)

(c) (d)

83. In any triangle

(a) (b)

(c) (d)

84. If in a triangle ABC side cms and , then the area of the triangle is **[MP PET 1997]**

(a) (b)

(c) (d)

85. If in a right angled triangle the hypotenuse is four times as long as the perpendicular drawn to it from opposite vertex, then one of its acute angle is

[MP PET 1998, 2004; UPSEAT 2002]

(a) (b)

(c) (d) None of these