MENTI-CLASS-X

TRIGONOMETRY

BY B K SINGH

1. The value of $(\sin 30° + \cos 30°) - (\sin 60° + \cos 60°)$ is

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

2. The value of $\dfrac{\tan 30°}{\cot 60°}$ is

(a) $\dfrac{1}{\sqrt{2}}$ (b) $\dfrac{1}{\sqrt{3}}$ (c) $\sqrt{3}$ (d) 1

3. The value of $(\sin 45° + \cos 45°)$ is

(a) $\dfrac{1}{\sqrt{2}}$ (b) $\sqrt{2}$ (c) $\dfrac{\sqrt{3}}{2}$ (d) 1

4. If $\cos A = \dfrac{4}{5}$, then the value of tan A is

(a) $\dfrac{3}{5}$ (b) $\dfrac{3}{4}$ (c) $\dfrac{4}{3}$ (d) $\dfrac{5}{3}$

5. If $\sin A = \dfrac{1}{2}$, then the value of cot A is

(a) $\sqrt{3}$ (b) $\dfrac{1}{\sqrt{3}}$ (c) $\dfrac{\sqrt{3}}{2}$ (d) 1

6. The value of the expression $\text{cosec}\,(75° + \theta) - \sec(15° - \theta) - \tan(55° + \theta) + \cot(35° - \theta)]$ is

(a) -1 (b) 0 (c) 1 (d) $\dfrac{3}{2}$

7. Given that $\sin\theta = \dfrac{a}{b}$, then $\cos\theta$ is equal to

(a) $\dfrac{b}{\sqrt{b^2 - a^2}}$ (b) $\dfrac{b}{a}$ (c) $\dfrac{\sqrt{b^2 - a^2}}{b}$ (d) $\dfrac{a}{\sqrt{b^2 - a^2}}$

8. If $\cos(\alpha + \beta) = 0$, then $\sin(\alpha - \beta)$ can be reduced to

(a) $\cos\beta$ (b) $\cos 2\beta$ (c) $\sin\alpha$ (d) $\sin 2\alpha$

9. The value of $\tan 1° \tan 2° \tan 3° \ldots \tan 89°$ is

(a) 0 (b) 1 (c) 2 (d) $\dfrac{1}{2}$

10. If $\cos 9\alpha = \sin 9\alpha$ and $\alpha < 90°$, then the value of $\tan 5\alpha$ is

(a) $\dfrac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) 1 (d) 0

11. If Δ ABC is right angled at C, then the value of $\cos(A + B)$ is

(a) 0 (b) 1 (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$

12. If $\sin A + \sin^2 A = 1$, then the value of the expression $(\cos^2 A + \cos^4 A)$ is

(a) 1 (b) $\frac{1}{2}$ (c) 2 (d) 3

13. Given that $\sin \alpha = \frac{1}{2}$ and $\cos \beta = \frac{1}{2}$, then the value of $(\alpha + \beta)$ is

(a) 0° (b) 30° (c) 60° (d) 90°

14. The value of the expression $\left[\frac{\sin^2 22° + \sin^2 68°}{\cos^2 22° + \cos^2 68°} + \sin^2 63° + \cos 63° \sin 27°\right]$ is

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

15. If $4 \tan \theta = 3$, then $\left(\frac{4 \sin \theta - \cos \theta}{4 \sin \theta + \cos \theta}\right)$ is equal to

(a) $\frac{2}{3}$ (b) $\frac{1}{3}$ (c) $\frac{1}{2}$ (d) $\frac{3}{4}$

16. If $\sin \theta - \cos \theta = 0$, then the value of $(\sin^4 \theta + \cos^4 \theta)$ is

(a) 1 (b) $\frac{3}{4}$ (c) $\frac{1}{2}$ (d) $\frac{1}{4}$

17. $\sin (45° + \theta) - \cos (45° - \theta)$ is equal to

(a) $2 \cos \theta$ (b) 0 (c) $2 \sin \theta$ (d) 1

18. The value of $\cos^2 26° - \sin^2 64°$ is

(a) 1 (b) –1 (c) 0 (d) 2

19. If $\sec \theta + \tan \theta = m$, then $\tan \theta$ is equal to

(a) $\frac{m^2 - 1}{2m}$ (b) $\frac{m^2 + 1}{2m}$ (c) $\frac{m^2 - 1}{m}$ (d) $\frac{m^2 + 1}{m}$

20. $\frac{\sin \theta}{1 + \cos \theta}$ is equal to

(a) $\frac{1 + \cos \theta}{\sin \theta}$ (b) $\frac{1 - \cos \theta}{\sin \theta}$ (c) $\frac{1 + \cos^2 \theta}{\sin \theta}$ (d) $\frac{1 - \sin^2 \theta}{\sin \theta}$

21. If triangle ABC is right angled at C, then the value of $\sec (A + B)$ is [CBSE (SP) 2019]

(a) 0 (b) 1 (c) $\frac{2}{\sqrt{3}}$ (d) not defined

22. If $\sin\theta + \cos\theta = \sqrt{2}\ \cos\theta$, $(\theta \neq 90°)$, then the value of $\tan\theta$ is [CBSE (SP) 2019]

(a) $\sqrt{2} - 1$ (b) $\sqrt{2} + 1$ (c) $\sqrt{2}$ (d) $-\sqrt{2}$

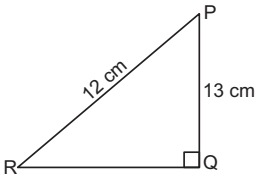
23. Given that $\sin \alpha = \frac{\sqrt{3}}{2}$ and $\cos \beta = 0$, then the value of $\beta - \alpha$ is [CBSE (SP) 2019]

(a) 0° (b) 90° (c) 60° (d) 30°

24. Given $\cot \theta = \frac{21}{20}$, then $\operatorname{cosec} \theta =$

(a) $\frac{21}{20}$ (b) $\frac{29}{21}$ (c) $\frac{20}{29}$ (d) $\frac{29}{20}$

25. In the figure, tanP – cotR =



(a) –1 (b) 1

(c) 0 (d) $\frac{12}{13}$

26. The value of $\cos^2 67° - \sin^2 23°$ =

(a) 1 (b) –1 (c) 0 (d) $\frac{1}{2}$

27. A, B, and C are interior angles of ΔABC, then $\text{cosec}\left(\frac{A+B}{2}\right)$ =

(a) $\sin\frac{C}{2}$ (b) $\tan\frac{B}{2}$ (c) $\cos\frac{A}{2}$ (d) $\sec\frac{C}{2}$

28. If tan 2A = cot (A – 24°), then A =

(a) 32° (b) 35° (c) 37° (d) 38°

29. The value of $\sin^2 33° + \sin^2 57°$ =

(a) 1 (b) –1 (c) $\frac{1}{2}$ (d) 0

30. The value of $\frac{\tan 36°}{\cot 54°}$ =

(a) 0 (b) 1 (c) –2 (d) 3

31. If $\text{cosec}^2\theta\ (1 + \cos\theta)\ (1 - \cos\theta) = k$, then the value of k is

(a) 0 (b) –1 (c) $\frac{1}{2}$ (d) 1

32. If $\tan A = \frac{4}{3}$, then sin A + cos A =

(a) $\frac{2}{5}$ (b) $\frac{3}{5}$ (c) $\frac{4}{11}$ (d) $\frac{7}{5}$

33. If ΔACB is right angled at C and AB = 29 units, BC = 21 units, and ∠ABC = θ, then $\sin^2\theta + \cos^2\theta$ =

(a) $\frac{29}{21}$ (b) $\frac{21}{29}$ (c) 0 (d) 1

34. In right triangle ABC, right angled at B, if tan A = 1, then 2sin A.cos A =

(a) 1 (b) –1 (c) 0 (d) $\frac{1}{2}$

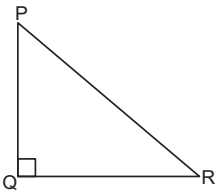
35. In ΔOPQ, right angled at P, OP = 7 cm and OQ – PQ = 1 cm, then sin Q + cos Q =

(a) $\frac{7}{25}$ (b) $\frac{24}{25}$ (c) $\frac{31}{25}$ (d) $\frac{7}{24}$

36. If 15 cot A = 8, then sec A =

(a) $\frac{8}{17}$ (b) $\frac{17}{8}$ (c) $\frac{15}{8}$ (d) $\frac{8}{15}$

37. In the given figure, ΔPQR is right-angled at Q, PQ = 3 cm, PR = 6 cm. The value of ∠QPR – ∠PRQ =



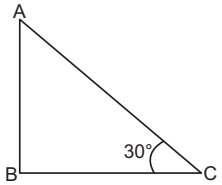
(a) 15° (b) 30°

(c) 45° (d) 10°

38. If $\sin(A - B) = \frac{1}{2}$; $\cos(A + B) = \frac{1}{2}$, then $\sin(A + B)$ =

(a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$ (c) $\frac{\sqrt{3}}{2}$ (d) 1

39. In ΔABC, right-angled at B, AB = 5 cm and ∠ACB = 30°, then $\frac{BC}{AC}$ =



(a) $\frac{1}{\sqrt{2}}$ (b) $\frac{\sqrt{3}}{2}$

(c) $5\sqrt{3}$ (d) 10 cm

40. If $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, then $\sec(A - B)$ =

(a) $\frac{\sqrt{3}}{2}$ (b) $\frac{2}{\sqrt{3}}$ (c) $\sqrt{3}$ (d) $\frac{1}{\sqrt{3}}$

41. If $\sin 3A = \cos(A - 26°)$, then the value of A is

(a) 29° (b) 32° (c) 36° (d) 42°

42. If $\tan 2A = \cot(A - 18°)$, then the value of A is

(a) 32° (b) 35° (c) 36° (d) 38°

43. If $\sec 4A = \operatorname{cosec}(A - 20°)$, then measurement of ∠A =

(a) 19° (b) 21° (c) 22° (d) 26°

44. If A, B and C are interior angles of a triangle ABC, then $\sin\left(\frac{B+C}{2}\right)$ =

(a) $\operatorname{cosec}\frac{A}{2}$ (b) $\tan\frac{A}{2}$ (c) $\sec\frac{A}{2}$ (d) $\cos\frac{A}{2}$

45. $\sec\theta(1 - \sin\theta)(\sec\theta + \tan\theta)$ =

(a) 0 (b) $\frac{1}{2}$ (c) 1 (d) none of these

46. $\frac{\sin^2 52° + \sin^2 38°}{\cos^2 26° + \cos^2 64°}$ =

(a) 0 (b) $\frac{1}{2}$ (c) 1 (d) none of these

47. $\sin 72°.\cos 18° + \cos 72°.\sin 18°$ =

(a) 1 (b) $1 - \sin^2\theta$ (c) $\cos^2\theta$ (d) 0

48. $9\sec^2\theta - 9\tan^2\theta$ =

(a) 1 (b) 9 (c) 8 (d) 0

49. $(1 + \tan\theta + \sec\theta)(1 + \cot\theta - \operatorname{cosec}\theta) =$

(a) 0 (b) 1 (c) 2 (d) –1

50. $\dfrac{1+\tan^2\theta}{1+\cot^2\theta} =$

(a) $\sec^2\theta$ (b) –1 (c) $\cot^2\theta$ (d) $\tan^2\theta$

51. $(\sec\theta + \tan\theta)(1 - \sin\theta) =$

(a) $\sec\theta$ (b) $\sin\theta$ (c) $\operatorname{cosec}\theta$ (d) $\cos\theta$

52. $2\cos^2\theta + \dfrac{2}{1+\cot^2\theta}$

(a) 1 (b) 2 (c) 0 (d) $\frac{1}{2}$

53. Simplified form of $\dfrac{3-\tan\theta}{3\operatorname{cosec}\theta-\sec\theta}$ is

(a) $\cos\theta$ (b) $\sin\theta$ (c) $\operatorname{cosec}\theta$ (d) $\tan\theta$

54. $\dfrac{2\sin^2 63^\circ+1+2\sin^2 27^\circ}{3\cos^2 17^\circ-2+3\cos^2 73^\circ} =$

(a) $\frac{1}{2}$ (b) $\frac{3}{2}$ (c) 0 (d) 3

55. $\cos(40^\circ + \theta) - \sin(50^\circ - \theta) + \dfrac{\cos^2 40^\circ+\cos^2 50^\circ}{\sin^2 40^\circ+\sin^2 50^\circ} =$

(a) $\frac{1}{2}$ (b) 1 (c) 0 (d) none of these

56. If $\sqrt{3}\tan\theta = 3\sin\theta$, then $\sin^2\theta - \cos^2\theta =$

(a) $\frac{1}{2}$ (b) 1 (c) $\frac{1}{3}$ (d) $\frac{1}{\sqrt{3}}$

57. $\dfrac{\sin\theta}{1+\cos\theta}+\dfrac{1+\cos\theta}{\sin\theta} =$

(a) $2\sin\theta$ (b) $2\cos\theta$ (c) $2\tan\theta$ (d) $2\operatorname{cosec}\theta$

58. If $\sin\theta = \dfrac{a}{\sqrt{a^2+b^2}}$, then $\tan\theta =$

(a) $\frac{b}{a}$ (b) $\frac{a}{b}$ (c) $\frac{-a}{b}$ (d) $\frac{-b}{a}$

59. $\dfrac{\cos\theta}{1-\sin\theta}+\dfrac{\cos\theta}{1+\sin\theta} =$

(a) $2\sin\theta$ (b) $2\cos\theta$ (c) $2\cos\theta$ (d) $2\sec\theta$

60. $\dfrac{\sin\theta-2\sin^3\theta}{2\cos^3\theta-\cos\theta} =$

(a) $\cot\theta$ (b) $\tan\theta$ (c) $\dfrac{1}{\sin\theta}$ (d) $\sec\theta$

61. If $\tan\theta + \cot\theta = 2$, then $\tan^{1000}\theta + \cot^{100}\theta =$

(a) 100 (b) $\frac{1}{100}$ (c) –2 (d) 2

62. If $\sin\theta + \cos\theta = \sqrt{2}\ \sin(90° - \theta)$, then $\cot\theta$ =

(a) $\sqrt{2}$ (b) $\sqrt{2}-1$ (c) $\sqrt{2}+1$ (d) $\frac{1}{\sqrt{2}}$

63. If $a\cos\theta - b\sin\theta = c$, then $a\sin\theta + b\cos\theta$ =

(a) $\pm\sqrt{a^2+b^2+c^2}$ (b) $\pm\sqrt{a^2-b^2+c^2}$ (c) $\pm\sqrt{a^2-b^2-c^2}$ (d) $\pm\sqrt{a^2+b^2-c^2}$

64. $\frac{\sin 50°}{\cos 40°}+\frac{\operatorname{cosec} 40°}{\sec 50°} - 4\cos 50°.\operatorname{cosec} 40°$ =

(a) 1 (b) 2 (c) –2 (d) 0

65. If $\cos\theta + \sin\theta = \sqrt{2}\ \cos\theta$, then $\cos\theta - \sin\theta$ =

(a) $\sqrt{2}\tan\theta$ (b) $\sqrt{2}\cot\theta$ (c) $\frac{1}{\sqrt{2}}\sin\theta$ (d) $\sqrt{2}\sin\theta$

66. If $\sec\theta + \tan\theta = p$, then $\frac{p^2-1}{p^2+1}$ =

(a) $\tan\theta$ (b) $\cos\theta$ (c) $\sin\theta$ (d) $\operatorname{cosec}\theta$

67. $\sin^6\theta + \cos^6\theta + 3\sin^2\theta.\cos^2\theta$ =

(a) 0 (b) 1 (c) 2 (d) –2

68. If $\sin\theta + \cos\theta = \sqrt{3}$, then $\tan\theta + \cot\theta$ =

(a) 1 (b) –1 (c) 2 (d) –2

69. If $\tan A = \frac{3}{4}$, then $\sin A.\cos A$ =

(a) $\frac{11}{25}$ (b) $\frac{13}{25}$ (c) $\frac{12}{25}$ (d) $\frac{17}{25}$

70. If $\sqrt{3}\tan\theta = 1$, then $\sin^2\theta - \cos^2\theta$ =

(a) $\frac{-1}{2}$ (b) $\frac{1}{2}$ (c) $\frac{3}{2}$ (d) $\frac{5}{2}$

71. $(1 + \tan^2\theta)\ (1 - \sin\theta)\ (1 + \sin^2\theta)$ =

(a) 0 (b) –1 (c) 1 (d) 2

72. If $2\sin^2\theta - \cos^2\theta = 2$, then the value of θ is =

(a) 60° (b) 30° (c) 0° (d) 90°

73. $\frac{\cos^2(45°+\theta)+\cos^2(45°-\theta)}{\tan(60°+\theta).\tan(30°-\theta)}$ =

(a) 0 (b) 1 (c) 2 (d) –1

74. If $\operatorname{cosec}\theta + \cot\theta = p$, then $\frac{p^2-1}{p^2+1}$ =

(a) $\sin\theta$ (b) $\tan\theta$ (c) $\operatorname{cosec}\theta$ (d) $\cos\theta$

75. If $\sin\theta + 2\cos\theta = 1$, then $2\sin\theta - \cos\theta$ =

(a) 1 (b) 0 (c) –2 (d) 2

76. If $\tan\theta + \sec\theta = p$, then $\frac{p^2+1}{2p} =$

(a) $\sin\theta$ (b) $\cos\theta$ (c) $\sec\theta$ (d) $\tan\theta$

77. $\frac{\sin^3\theta+\cos^3\theta}{\sin\theta+\cos\theta} + \sin\theta.\cos\theta =$

(a) 0 (b) 1 (c) –1 (d) $\frac{1}{2}$

78. $\sqrt{\frac{\sec\theta-1}{\sec\theta+1}}+\sqrt{\frac{\sec\theta+1}{\sec\theta-1}} =$

(a) 2 $\sin\theta$ (b) 2 $\operatorname{cosec}\theta$ (c) 2 $\tan\theta$ (d) 2 $\sec\theta$

79. $\frac{(1-\cot\theta)^2}{\operatorname{cosec}^2\theta} + 2\ \sin\theta.\cos\theta =$

(a) 1 (b) 0 (c) 2 (d) –2

80. $2\frac{\sin 43^\circ}{\cos 47^\circ} - \frac{\cot 30^\circ}{\tan 60^\circ} - \sqrt{2}\ \sin 45^\circ =$

(a) 2 (b) –1 (c) 1 (d) 0

81. $\left(\frac{\sin 47^\circ}{\cos 43^\circ}\right)^2 + \left(\frac{\cos 43^\circ}{\sin 47^\circ}\right)^2 - 2\cos^2 45^\circ =$

(a) –2 (b) 2 (c) 0 (d) 1

82. $\frac{\cos 80^\circ}{\sin 10^\circ} + 2\sin 59^\circ.\operatorname{cosec} 31^\circ - 3\tan 49^\circ \tan 41^\circ =$

(a) 0 (b) 1 (c) $\frac{3}{2}$ (d) –1

83. $\cot^4\theta - \operatorname{cosec}^4\theta + \cot^2\theta + \operatorname{cosec}^2\theta =$

(a) 0 (b) 1 (c) –1 (d) 2

84. If $\cot\theta + \frac{1}{\cot\theta} = 2$, then $\cot^2\theta + \frac{1}{\cot^2\theta} =$

(a) 1 (b) 2 (c) –1 (d) –2

85. If $\sin\theta + \cos\theta = 1$, then the value of $\sin\theta.\cos\theta =$

(a) 1 (b) 0 (c) –1 (d) 2

86. If $\sin\theta + \operatorname{cosec}\theta = 2$, then the value of $\sin^2\theta + \operatorname{cosec}^2\theta =$

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

87. If $4\sin\theta = 3$ and $\sqrt{\frac{\operatorname{cosec}^2\theta-\cot^2\theta}{\sec^2\theta-1}} + 2\cot\theta = \frac{\sqrt{7}}{x} + \cos\theta$, then the value of x is

(a) $\frac{1}{3}$ (b) $\frac{5}{3}$ (c) $\frac{4}{3}$ (d) $\frac{3}{4}$

88. If $\cot\theta = \frac{15}{8}$, then $\frac{(2+2\sin\theta)(1-\sin\theta)}{(1+\cos\theta)(2-2\cos\theta)} =$

(a) $\frac{25}{64}$ (b) $\frac{64}{225}$ (c) $\frac{225}{64}$ (d) $-\frac{225}{64}$

89. $5\tan^2\theta - 5\sec^2\theta =$

(a) –5 (b) 5 (c) 0 (d) 1

90. If cosec $\theta = \frac{3}{2}$, then the value of $2(\text{cosec}^2\,\theta + \cot^2\,\theta)$ =

(a) 5 (b) 6 (c) 7 (d) $\frac{7}{5}$

91. If $\tan\,\theta = \frac{2}{\sqrt{5}}$, then $\frac{\text{cosec}^2\,\theta - \sec^2\,\theta}{\text{cosec}^2\,\theta + \sec^2\,\theta} =$

(a) $\frac{1}{3}$ (b) $\frac{5}{7}$ (c) $\frac{1}{9}$ (d) $\frac{\sqrt{5}}{9}$

92. If cosec $\theta - \sin\,\theta = a$, sec $\theta - \cos\,\theta = b$, then $a^2\,b^2(a^2 + b^2 + 3)$ =

(a) 3 (b) –3 (c) 1 (d) –1

93. $\sec^4\,\theta\,(1 - \sin^2\,\theta) - 2\tan^4\,\theta$ =

(a) 0 (b) 1 (c) –1 (d) none of these

94. cot 18°.cot 39°.cot 51°.cot 60°.cot 72° =

(a) $\sqrt{3}$ (b) $\frac{2}{\sqrt{3}}$ (c) $\frac{1}{\sqrt{3}}$ (d) 1

95. If $x = a\,\cos^3\theta$, $y = b\,\sin^3\theta$, then $\left(\frac{x}{a}\right)^{\frac{2}{3}} + \left(\frac{y}{b}\right)^{\frac{2}{3}}$ =

(a) $\frac{1}{3}$ (b) $\frac{2}{3}$ (c) $\frac{3}{2}$ (d) 1

96. $2\frac{\sin 43°}{\cos 47°} - \frac{\cot 30°}{\tan 60°} - \sqrt{2}\,\sin\,45°$ =

(a) 2 (b) –2 (c) $\sqrt{2}$ (d) 0

97. If $\tan\,30° = \frac{1}{\sqrt{3}}$, then, using $\tan 2\theta = \frac{2\tan\theta}{1 - \tan^2\theta}$, the value of tan 60° =

(a) $\frac{1}{\sqrt{3}}$ (b) $\sqrt{3}$ (c) 0 (d) not defined

98. $[\cos(90° - \theta) + \sin(90° - \theta)]^2 + [\sin(90° - \theta) - \cos(90° - \theta)]^2$ =

(a) 0 (b) 1 (c) 2 (d) –1

99. $\frac{\cos(90° - \theta).\cos\theta}{\tan\theta} + \cos^2(90° - \theta)$ =

(a) 1 (b) –1 (c) 0 (d) none of these

100. $\left(\frac{\sin 47°}{\cos 43°}\right)^2 + \left(\frac{\cos 43°}{\sin 47°}\right)^2 - 4\cos^2\,45°$ =

(a) 1 (b) 0 (c) 2 (d) –1

3. If cosec $\theta = \frac{13}{12}$, then the value of cot θ + tan θ = _____

4. If sin $\theta = \frac{\sqrt{3}}{2}$, then the value of $2\cot^2 \theta - 1$ = _____

5. If tan $\theta = \frac{1}{\sqrt{3}}$, then $7 \sin^2 \theta + 3 \cos^2 \theta$ = _____

6. In a right triangle PQR, right angled at Q, if tan P = 1, then, 2 sin P. cos P = _____

7. If cos A = cos 60°.cos 30° + sin 60°.sin 30°, then the value of A = _____.

8. If A and B are acute angle such that tan (A + B) = $\sqrt{3}$ and tan (A – B) = $\frac{1}{\sqrt{3}}$, then A + B = _____

9. If $3 \tan^2 A - 1 = 0$ ($0° < A < 90°$), then A = _____.

10. If $\sqrt{3}$ cot 2A = 1, [$0° < A < 90°$], then A = _____.

11. If cosec $\theta = \frac{5}{4}$, then 5 sin θ – 3 tan θ = _____.

12. If cos x = cos 60°.cos 30° + sin 60°.sin 30°, then x = _____.

13. If 3 sin θ + 5 cos θ = 5, then 5 sin θ – 3 cos θ = _____

14. If cosec $\theta = 2x$ and cot $\theta = \frac{2}{x}$, then $2\left(x^2 - \frac{1}{x^2}\right)$ = _____

15. If $2x$ = sec θ and $\frac{2}{x}$ = tan θ, then $\left(x^2 - \frac{1}{x^2}\right)$ = _____

16. If $\frac{x}{a}$ sin $\theta - \frac{y}{b}$ cos θ = 1 and $\frac{x}{a}$ cos $\theta + \frac{y}{b}$ sin θ = 1, then $\frac{x^2}{a^2} + \frac{y^2}{b^2}$ = _____.

17. If 5 sin θ + 7 cos θ = 7, then 7 sin θ – 5 cos θ = _____.

18. If cos $\theta + \cos^2 \theta = 1$, then the value of $\sin^2 \theta + \sin^4 \theta$ = _____

19. If $7 \sin^2 \theta + 3 \cos^2 \theta = 4$, then tan θ = _____

20. $(\sin^4 \theta - \cos^4 \theta + 1)$ $\text{cosec}^2 \theta$ = _____

21. $\frac{\cos 70°}{\sin 20°} + \frac{\cos 59°}{\sin 31°} - 8 \sin^2 30°$ = _____

22. cot 1°.cot 2°.cot 3° ..... cot 89° = _____

23. If $x$sin (90° – θ). cot(90° – θ) = cos(90° – θ), then x = _____

24. If $4\left(\frac{\sec^2 59° - \cot^2 31°}{3}\right) - \frac{2}{3}$ sin 90° + 3 $\tan^2$ 56°.$\tan^2$ 34° = $\frac{x}{3}$, then x = _____

25. (sec 13° – cot 77°) (sec 13° + cot 77°) = _____

III. VERY SHORT ANSWER QUESTIONS

1. Find the value of sin A sec A cot A.

2. Find the value of $\frac{(1+\tan^2\theta)}{\sec^2\theta}$.

3. If $\sin A = \frac{3}{5}$, then find the value of cos A + sec A.

4. If $\theta \leq 0° \leq 90°$, then what is the minimum value of sin θ.

5. As we know, $\frac{1}{x}$ can always be written as x^{-1}, $x \neq 0$. Can we also write $\frac{1}{\sin A}$ as $\sin^{-1}A$?

6. Find the value of 2sin 30° cos 30°.

7. Find the value of cos 45° sin 30° + cos 30° sin 45°.

8. Can sin θ be equal to $\frac{5}{3}$ for some angle θ?

9. Can tan θ be equal to $\frac{5}{3}$ for some angle θ?

10. Evaluate $\frac{\sin 44°}{\cos 46°}$ + tan 45°.

11. Express tan 72° + sin 69° in terms of t-ratios of angles between 0° and 45°.

12. Find the value of $4\sec^2\theta - 4\tan^2\theta$

13. Evaluate $\sin^2 60° + 2\tan 45° - \cos^2 30°$. [CBSE 2019]

14. If $\sin A = \frac{3}{4}$, find sec A. [CBSE 2019]

15. Find A if tan 2A = cot(A – 24°). [CBSE 2019]

16. Find the value of $(\sin^2 33° + \sin^2 57°)$ [CBSE 2019]

17. Find the value of $(\cos^2 67° - \sin^2 23°)$ [CBSE 2018]

ANSWERS

I. Multiple Choice Questions :

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

II. Fill in the Blanks :

1. 2	**2.** $\frac{625}{168}$	**3.** $\frac{169}{60}$	**4.** $\frac{-1}{3}$	**5.** 4
6. 1	**7.** 30°	**8.** 60°	**9.** 30°	**10.** 30°
11. 0	**12.** 30°	**13.** ± 3	**14.** $\frac{1}{2}$	**15.** $\frac{1}{4}$
16. 2	**17.** ± 5	**18.** 1	**19.** $\frac{1}{\sqrt{3}}$	**20.** 2
21. 0	**22.** 1	**23.** 1	**24.** 11	**25.** 1

III. Very Short Answer Questions :

1. 1	**2.** 1	**3.** $\frac{41}{20}$	**4.** 0	**5.** no
6. $\frac{\sqrt{3}}{2}$	**7.** $\frac{\sqrt{2}+1}{2\sqrt{2}}$	**8.** no	**9.** yes	**10.** 2
11. cot 18° + cos 21°		**12.** 4	**13.** 2	**14.** $\frac{4}{\sqrt{7}}$
15. 38°	**16.** 1	**17.** 0		