

- What is $\frac{\sin \theta}{\operatorname{cosec} \theta} + \frac{\cos \theta}{\sec \theta}$ equal to?
 - 1
 - $\frac{1}{2}$
 - $\frac{1}{3}$
 - 2
- If $\tan \theta + \sec \theta = 4$, then what is the value of $\sin \theta$?
 - $\frac{8}{17}$
 - $\frac{8}{15}$
 - $\frac{15}{17}$
 - $\frac{23}{32}$
- What is the angle subtended by 1 m pole at a distance 1 km on the ground in sexagesimal measure?
 - $\frac{9}{50\pi}$ degree
 - $\frac{9}{5\pi}$ degree
 - 3.4 minute
 - 3.5 minute
- If $\cot A \cot B = 2$, then what is the value of $\cos(A+B) \sec(A-B)$?
 - $\frac{1}{3}$
 - $\frac{2}{3}$
 - 1
 - 1
- What is $\tan\left(\frac{\pi}{12}\right)$ equal to?
 - $2 - \sqrt{3}$
 - $2 + \sqrt{3}$
 - $\sqrt{2} - \sqrt{3}$
 - $\sqrt{3} - \sqrt{2}$
- If $\theta = 18^\circ$, then what is the value of $4\sin^2 \theta + 2\sin \theta$?
 - 1
 - 1
 - 0
 - 2
- If $\operatorname{cosec} \theta - \cot \theta = \frac{1}{\sqrt{3}}$ where $\theta \neq 0$, then what is the value of $\cos \theta$?
 - 0
 - $\frac{\sqrt{3}}{2}$
 - $\frac{1}{2}$
 - $\frac{1}{\sqrt{2}}$
- What is the maximum value of $\sin 3\theta \cos 2\theta + \cos 3\theta \sin 2\theta$?
 - 1
 - 2
 - 4
 - 10
- What is $\sin A \cos A \tan A + \cos A \sin A \cot A$ equal to?
 - $\sin A$
 - $\cos A$
 - $\tan A$
 - 1
- If $\sin 3A = 1$, then how many distinct values can $\sin A$ assume?
 - 1
 - 2
 - 3
 - 4
- What is $\frac{\sin x}{1 + \cos x} + \frac{1 + \cos x}{\sin x}$ equal to?
 - $2 \tan x$
 - $2 \operatorname{cosec} x$
 - $2 \cos x$
 - $2 \sin x$
- If $\tan^2 B = \frac{1 - \sin A}{1 + \sin A}$ then what is the value of $A + 2B$?
 - $\frac{\pi}{2}$
 - $\frac{\pi}{3}$
 - $\frac{\pi}{4}$
 - $\frac{\pi}{6}$
- Given that $\cos 20^\circ - \sin 20^\circ = p$, then what is the value of $\sin 40^\circ$?
 - $1 - p^2$
 - $1 + p^2$
 - p^2
 - $p^2 - 1$
- Given that $p = \tan \alpha + \tan \beta$, and $q = \cot \alpha + \cot \beta$; then what is $\left(\frac{1}{p} - \frac{1}{q}\right)$ equal to?
 - $\cot(\alpha - \beta)$
 - $\tan(\alpha - \beta)$
 - $\tan(\alpha + \beta)$
 - $\cot(\alpha + \beta)$
- A is a certain positive acute angle which satisfies the following equation :
Number of degrees in A + Number of radians in A = $(180 + \pi)/3$
What is the angle A?
 - 20°
 - 40°
 - 60°
 - 80°
- If $\sin^3 \theta + \cos^3 \theta = 0$, then what is the value of θ ?
 - $-\frac{\pi}{4}$
 - 0
 - $\frac{\pi}{4}$
 - $\frac{\pi}{3}$
- What is the value of $\frac{\operatorname{cosec}(\pi + \theta) \cot\{(9\pi/2 - \theta)\} \operatorname{cosec}^2(2\pi - \theta)}{\cot(2\pi - \theta) \sec^2(\pi - \theta) \sec\{(3\pi/2) + \theta\}}$
 - 0
 - 1
 - 1
 - ∞
- What is the value of $\sin(A+B) \sin(A-B) + \sin(B+C) \sin(B-C) + \sin(C+A) \sin(C-A)$?
 - 0
 - $\sin A + \sin B + \sin C$
 - $\cos A + \cos B + \cos C$
 - 1
- Given that $\tan \alpha = m/(m+1)$, $\tan \beta = 1/(2m+1)$, then what is the value of $\alpha + \beta$?
 - 0
 - $\frac{\pi}{4}$
 - $\frac{\pi}{6}$
 - $\frac{\pi}{3}$
- If $x = r \sin \theta \cos \phi$, $y = r \sin \theta \sin \phi$ and $z = r \cos \theta$, then $x^2 + y^2 + z^2$ is independent of which of the following?
 - r only
 - r, ϕ
 - θ, ϕ
 - r, θ
- What is the value of $\tan 15^\circ \cdot \tan 195^\circ$?
 - $7 - 4\sqrt{3}$
 - $7 + 4\sqrt{3}$
 - $7 + 2\sqrt{3}$
 - $7 + 6\sqrt{3}$

21. What is the minimum value of $\cos \theta + \cos 2\theta$?
- (a) -2 (b) $-\frac{9}{8}$
(c) 0 (d) $-\frac{9}{16}$
22. If $3 \tan \theta + 4 = 0$, where $(\pi/2) < \theta < \pi$, then what is the value of $2 \cot \theta - 5 \cos \theta + \sin \theta$?
- (a) $-\frac{53}{10}$ (b) $\frac{7}{10}$
(c) $\frac{23}{10}$ (d) $\frac{37}{10}$
23. What is the value of $\operatorname{cosec} (13\pi/12)$?
- (a) $\sqrt{6} + \sqrt{2}$ (b) $-\sqrt{6} + \sqrt{2}$
(c) $\sqrt{6} - \sqrt{2}$ (d) $-\sqrt{6} - \sqrt{2}$
24. What is the value of $(\sec \theta - \cos \theta)(\operatorname{cosec} \theta - \sin \theta)(\cot \theta + \tan \theta)$?
- (a) 1 (b) 2
(c) $\sin \theta$ (d) $\cos \theta$
25. If $\alpha + \beta = \frac{\pi}{2}$ and $\beta + \gamma = \alpha$; then which one of the following is correct?
- (a) $2 \tan \beta + \tan \gamma = \tan \alpha$
(b) $\tan \beta + 2 \tan \gamma = \tan \alpha$
(c) $\tan \beta + 2 \tan \gamma = \tan \alpha$
(d) $2(\tan \beta + \tan \gamma) = \tan \alpha$
26. What is the value of $\frac{(\cos 10^\circ + \sin 20^\circ)}{(\cos 20^\circ - \sin 10^\circ)}$?
- (a) $\frac{1}{\sqrt{3}}$ (b) $-\frac{1}{\sqrt{3}}$
(c) $\sqrt{3}$ (d) $-\sqrt{3}$
27. If α and β are such that $\tan \alpha = 2 \tan \beta$, then what is $\sin(\alpha + \beta)$ equal to?
- (a) 1 (b) $2 \sin(\alpha - \beta)$
(c) $\sin(\alpha - \beta)$ (d) $3 \sin(\alpha - \beta)$
28. What is the value of $\cos 306^\circ + \cos 234^\circ + \cos 162^\circ + \cos 18^\circ$?
- (a) 1 (b) -1
(c) 0 (d) 2
29. Let ABCD be a square and let P be a point on AB such that $AP : PB = 1 : 2$. If $\angle APD = \theta$, then what is the value of $\cos \theta$?
- (a) $\frac{1}{\sqrt{10}}$ (b) $\frac{1}{\sqrt{5}}$
(c) $\frac{2}{\sqrt{10}}$ (d) $\frac{2}{\sqrt{5}}$
30. Which one of the following is positive in the third quadrant?
- (a) $\sin \theta$ (b) $\cos \theta$
(c) $\tan \theta$ (d) $\sec \theta$
31. What is the value of $\sin(1920^\circ)$?
- (a) 1/2 (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{\sqrt{3}}{2}$ (d) 1/3
32. Let $\sin(A+B) = 1$ and $\sin(A-B) = \frac{1}{2}$ where $A, B \in \left[0, \frac{\pi}{2}\right]$. What is the value of A?
- (a) $\frac{\pi}{6}$ (b) $\frac{\pi}{3}$
(c) $\frac{\pi}{4}$ (d) $\frac{\pi}{8}$
33. What is $\tan(A+2B) \cdot \tan(2A+B)$ equal to?
- (a) -1 (b) 0
(c) 1 (d) 2
34. What is $\sin^2 A - \sin^2 B$ equal to?
- (a) 0 (b) 1/2
(c) 1 (d) 2
35. What is the value of $\sin 420^\circ \cdot \cos 390^\circ + \cos(-300^\circ) \cdot \sin(-330^\circ)$?
- (a) 0 (b) 1
(c) 2 (d) -1
35. Consider the following statements:
1. 1° in radian measure is less than 0.02 radians.
2. 1 radian in degree measure is greater than 45° .
Which of the above statements is/are correct?
- (a) 1 only (b) 2 only
(c) Both 1 and 2 (d) Neither 1 nor 2
36. What is maximum value of $\sin^2 x$?
- (a) -1 (b) 0
(c) 1 (d) Infinity
37. If ABCD is a cyclic quadrilateral then what is $\sin A + \sin B - \sin C - \sin D$ equal to?
- (a) 0 (b) 1
(c) 2 (d) $2(\sin A + \sin B)$
38. What is the value of $\sin 15^\circ$?
- (a) $\frac{\sqrt{3}-1}{2\sqrt{2}}$ (b) $\frac{\sqrt{3}+1}{2\sqrt{2}}$
(c) $\frac{\sqrt{3}-1}{\sqrt{3}+1}$ (d) $\frac{\sqrt{3}+1}{\sqrt{3}-1}$
39. If $4 \sin^2 \theta = 1$, where $0 < \theta < 2\pi$, how many values does θ take?
- (a) 1 (b) 2
(c) 4 (d) None of the above
40. What is the value of $\sin 18^\circ \cos 36^\circ$ equal to?
- (a) 4 (b) 2
(c) 1 (d) 1/4

41. If $\sin A + \sin B + \sin C = 3$ then what is $\cos A + \cos B + \cos C$ equal to?
 (a) -1 (b) 0
 (c) 1 (d) 3
42. If $\tan A - \tan B = x$ and $\cot B - \cot A = y$, then what is $\cot(A - B)$ equal to?
 (a) $\frac{1}{y} - \frac{1}{x}$ (b) $\frac{1}{x} - \frac{1}{y}$
 (c) $\frac{1}{x} + \frac{1}{y}$ (d) $-\frac{1}{x} - \frac{1}{y}$
43. If $\tan A = 1/2$ and $\tan B = 1/3$, then what is the value of $4A + 4B$?
 (a) $\pi/4$ (b) $\pi/2$
 (c) π (d) 2π
44. What is the maximum value of $3 \cos x + 4 \sin x + 5$?
 (a) 5 (b) 7
 (c) 10 (d) 12
45. If $\sin \theta = \cos^2 \theta$, then what is $\cos^2 \theta (1 + \cos^2 \theta)$ equal to?
 (a) 1 (b) 0
 (c) $\cos^2 \theta$ (d) $2 \sin \theta$
46. How many values of θ between 0° and 360° satisfy $\tan \theta = k \neq 0$, where k is a given number?
 (a) 1 (b) 2
 (c) 4 (d) Many
47. If $\sin x + \sin y = a$, $\cos x + \cos y = b$, then what is the value of $\cos(x - y)$?
 (a) $a^2 - 1$ (b) $b^2 - 1$
 (c) $\frac{1}{2}(a^2 + b^2 - 2)$ (d) $\frac{1}{2}(a^2 + b^2)$
48. What is $\sqrt{2 + \sqrt{2 + \sqrt{2 + 2 \cos 4A}}}$ equal to?
 (a) $\cos A$ (b) $\cos(2A)$
 (c) $2 \cos(A/2)$ (d) $\sqrt{2 \cos A}$
49. The equation $\tan^2 \phi + \tan^6 \phi = \tan^3 \phi \cdot \sec^2 \phi$ is
 (a) identity for only one value of ϕ
 (b) not an identity
 (c) identity for all values of ϕ
 (d) None of the above
50. If $\sec A + \tan A = p$, then what is the value of $\sin A$?
 (a) $\frac{p^2 - 1}{p^2 + 1}$ (b) $\frac{p^2 + 1}{p^2 - 1}$
 (c) 1 (d) None of these
51. What is the value of $\tan(-1575^\circ)$?
 (a) 1 (b) $1/2$
 (c) 0 (d) -1
52. For which acute angle θ , $\operatorname{cosec}^2 \theta = 3\sqrt{3} \cot \theta - 5$?
 (a) $\frac{5\pi}{12}$ (b) $\frac{\pi}{3}$
 (c) $\frac{\pi}{6}$ (d) $\frac{\pi}{4}$
53. If $\tan^2 \theta = 2 \tan^2 \phi + 1$, then which one of the following is correct?
 (a) $\cos(2\theta) = \cos(2\phi) - 1$
 (b) $\cos(2\theta) = \cos(2\phi) + 1$
 (c) $\cos(2\theta) = [\cos(2\phi) - 1]/2$
 (d) $\cos(2\theta) = [\cos(2\phi) + 1]/2$
54. What is the value of $1 - \sin 10^\circ \sin 50^\circ \sin 70^\circ$?
 (a) $1/8$ (b) $3/8$
 (c) $5/8$ (d) $7/8$
55. The sines of two angles of a triangle are equal to $5/13$ and $99/101$. What is the cosine of the third angle?
 (a) $255/1313$ (b) $265/1313$
 (c) $275/1313$ (d) $770/1313$
56. After subtending an angle of 1000° from its initial position, the revolving line will be situated in which one of the following quadrants?
 (a) First quadrant (b) Second quadrant
 (c) Third quadrant (d) Fourth quadrant
57. One radian is approximately equal to which one of the following?
 (a) 90° (b) 180°
 (c) 57° (d) 47°
58. If $\cot(x + y) = 1/\sqrt{3}$, $\cot(x - y) = \sqrt{3}$ then what are the smallest positive values of x and y respectively?
 (a) $45^\circ, 30^\circ$ (b) $30^\circ, 45^\circ$
 (c) $15^\circ, 60^\circ$ (d) $45^\circ, 15^\circ$
59. $x = \sin \theta \cos \theta$ and $y = \sin \theta + \cos \theta$ are satisfied by which one of the following equations?
 (a) $y^2 - 2x = 1$ (b) $y^2 + 2x = 1$
 (c) $y^2 - 2x = -1$ (d) $y^2 + 2x = -1$
60. If $\sin^4 x - \cos^4 x = p$, then which one of the following is correct?
 (a) $p = 1$ (b) $p = 0$
 (c) $|p| > 1$ (d) $|p| \leq 1$
61. If $\cos \theta < \sin \theta$ and θ lies in the first quadrant, then which one of the following is correct?
 (a) $0 < \theta < \pi/4$ (b) $\pi/4 < \theta < \pi/2$
 (c) $0 < \theta < \pi/3$ (d) $\pi/3 < \theta < \pi/2$
62. If $\sin^2 x + \sin^2 y = 1$, then what is the value of $\cot(x + y)$?
 (a) 1 (b) $\sqrt{3}$
 (c) 0 (d) $1/\sqrt{3}$
63. What is the value of $\cos 10^\circ + \cos 110^\circ + \cos 130^\circ$?
 (a) -1 (b) 0
 (c) 1 (d) 2
64. What is the length of arc of a circle of radius 5 cm subtending a central angle measuring 15° ?
 (a) $5\pi/12$ cm (b) $7\pi/12$ cm
 (c) $\pi/12$ cm (d) $\pi/5$ cm
65. What is the maximum value of $\sin \theta \cos \theta$?
 (a) 1 (b) $1/2$

- (c) $1/\sqrt{2}$ (d) $\sqrt{3}/2$
66. If $\sin x + \operatorname{cosec} x = 2$, then what is the value of $\sin^4 x + \operatorname{cosec}^4 x$?
(a) 2 (b) 4
(c) 8 (d) 16
67. What is the value of $\tan 15^\circ + \cot 15^\circ$?
(a) $\sqrt{3}$ (b) $2\sqrt{3}$
(c) 4 (d) 2
68. If $A + B + C = \pi/2$, then what is the value of $\tan A \tan B + \tan B \tan C + \tan C \tan A$?
(a) 0 (b) 1
(c) -1 (d) $\tan A \tan B \tan C$
69. If $(\sin x + \operatorname{cosec} x)^2 + (\cos x + \sec x)^2 = k + \tan^2 x + \cot^2 x$, then what is the value of k ?
(a) 8 (b) 7
(c) 4 (d) 3
70. If $p = \sin(989^\circ) \cos(991^\circ)$, then which one of the following is correct?
(a) p is finite and positive
(b) p is finite and negative
(c) $p = 0$
(d) p is undefined
71. If $A = \frac{41\pi}{12}$, then what is the value of $\frac{1 - 3 \tan^2 A}{3 \tan A - \tan^3 A}$?
(a) -1 (b) 1
(c) $1/3$ (d) 3
72. Consider the following statements
I. If $\theta = 1200^\circ$, then $(\sec \theta + \tan \theta)^{-1}$ is positive.
II. If $\theta = 1200^\circ$, then $(\operatorname{cosec} \theta - \cot \theta)$ is negative.
Which of the statements given above is/are correct?
(a) I only (b) II only
(c) Both I and II (d) Neither I nor II
73. If $\cot \theta = 2 \cos \theta$, where $(\pi/2) < \theta < \pi$, then what is the value of θ ?
(a) $5\pi/6$ (b) $2\pi/3$
(c) $3\pi/4$ (d) $11\pi/12$
74. If $\cot \theta = 5/12$ and θ lies in the third quadrant, then what is $(2 \sin \theta + 3 \cos \theta)$ equal to?
(a) -4
(b) $-p^2$ for some odd prime p
(c) $(-q/p)$ where p is an odd prime and q a positive integer with (q/p) not an integer
(d) $-p$ for some odd prime p
75. What is the value of $\cos(\pi/9) + \cos(\pi/3) + \cos(5\pi/9) + \cos(7\pi/9)$?
(a) 1 (b) -1
(c) $-1/2$ (d) $1/2$
76. What is the value of $\sqrt{3} \operatorname{cosec} 20^\circ - \sec 20^\circ$?
(a) 4 (b) 3
(c) 2 (d) 1
77. Match List_I with List_II and select the correct answer using the code given below the lists

	List-I		List-II
A.	$\tan 15^\circ$	1.	$-2 - \sqrt{3}$
B.	$\tan 75^\circ$	2.	$2 + \sqrt{3}$
C.	$\tan 105^\circ$	3.	$-2 + \sqrt{3}$
		4.	$2 - \sqrt{3}$

Codes :

	A	B	C
(a)	4	1	2
(b)	4	2	1
(c)	3	2	1
(d)	2	1	4

78. If $\tan A = \frac{1}{2}$ and $\tan B = \frac{1}{3}$, then what is the value of $(A+B)$?
(a) 0 (b) $\frac{\pi}{4}$
(c) $\frac{\pi}{2}$ (d) π
79. If $\cos x \neq -1$, then what is $\frac{\sin x}{1 + \cos x}$ equal to?
(a) $-\cot \frac{x}{2}$ (b) $\cot \frac{x}{2}$
(c) $\tan \frac{x}{2}$ (d) $-\tan \frac{x}{2}$
80. What is the value of $\frac{1 + \tan 15^\circ}{1 - \tan 15^\circ}$?
(a) 1 (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) $\sqrt{3}$
81. What is the value of $\sqrt{3} \operatorname{cosec} 20^\circ - \sec 20^\circ$?
(a) $1/4$ (b) 4
(c) 2 (d) 1
82. What is $\tan \left(7\frac{1}{2}\right)^\circ$ equal to?
(a) $\sqrt{6} + \sqrt{3} - \sqrt{2} + 2$ (b) $\sqrt{6} + \sqrt{3} + \sqrt{2} + 2$
(c) $\sqrt{6} - \sqrt{3} + \sqrt{2} - 2$ (d) $\sqrt{6} + \sqrt{3} + \sqrt{2} - 2$
83. What is the value of $\frac{\cos 15^\circ + \cos 45^\circ}{\cos^3 15^\circ + \cos^3 45^\circ}$?
(a) $\frac{1}{4}$ (b) $\frac{1}{2}$
(c) $\frac{1}{3}$ (d) None of these
84. The angle A lies in the third quadrant and it satisfies the equation $4(\sin^2 x + \cos x) = 1$. What is the measure of the angle A ?
(a) 225° (b) 240°
(c) 210° (d) None of these
85. What is $\frac{\sin \theta + 1}{\cos \theta}$ equal to?
(a) $\frac{\sin \theta + \cos \theta - 1}{\sin \theta + \cos \theta + 1}$ (b) $\frac{\sin \theta + \cos \theta + 1}{\sin \theta + \cos \theta - 1}$
(c) $\frac{\sin \theta - \cos \theta - 1}{\sin \theta + \cos \theta + 1}$ (d) $\frac{\sin \theta - \cos \theta + 1}{\sin \theta + \cos \theta - 1}$
86. One of the angles of a triangle is $1/2$ radian and the other is 99° . What is the third angle in radian measure?
(a) $\frac{9\pi - 10}{\pi}$ (b) $\frac{90\pi - 100}{7\pi}$
(c) $\frac{90\pi - 10}{\pi}$ (d) None of these
87. What is $\left(\frac{\sec 18^\circ}{\sec 144^\circ} + \frac{\operatorname{cosec} 18^\circ}{\operatorname{cosec} 144^\circ}\right)$ equal to?

- (a) $\sec 18^\circ$ (b) $\operatorname{cosec} 18^\circ$
(c) $-\sec 18^\circ$ (d) $-\operatorname{cosec} 18^\circ$
88. If α and β are positive angles such that $\alpha + \beta = \frac{\pi}{4}$, then what is $(1 + \tan \alpha)(1 + \tan \beta)$ equal to?
(a) 0 (b) 1
(c) 2 (d) 3
89. What is the value of $(\sin 50^\circ - \sin 70^\circ + \sin 10^\circ)$?
(a) 1 (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{\sqrt{3}}{2}$ (d) 0
90. If $\cos A + \cos B = m$ and $\sin A + \sin B = n$, where $m, n \neq 0$, then what is $\sin(A+B)$ equal to?
(a) $\frac{mn}{m^2 + n^2}$ (b) $\frac{2mn}{m^2 + n^2}$
(c) $\frac{m^2 + n^2}{2mn}$ (d) $\frac{mn}{m+n}$
91. If $y = \sec^2 \theta + \cos^2 \theta$, where $0 < \theta < \frac{\pi}{2}$, then which one of the following is correct?
(a) $y = 0$ (b) $0 \leq y \leq 2$
(c) $y \geq 2$ (d) None of these
92. If $\tan A = 3/4$ and $\tan B = -12/5$, then how many values can $\cot(A-B)$ have depending on the actual values of A and B ?
(a) 1 (b) 2
(c) 3 (d) 4
93. What is the value of $\sin 15^\circ \sin 75^\circ$?
(a) $1/4$ (b) $1/8$
(c) $1/16$ (d) 1
94. What is the value of $\frac{\sin \theta + \cos \theta - \tan \theta}{\sec \theta + \operatorname{cosec} \theta - \cot \theta}$, when $\theta = \frac{3\pi}{4}$?
(a) 0 (b) 1
(c) -1 (d) None of these
95. What is the value of $\sin 292 \frac{1}{2}^\circ$?
(a) $\frac{1}{3} \sqrt{2 + \sqrt{3}}$ (b) $-\frac{1}{3} \sqrt{2 - \sqrt{3}}$
(c) $\frac{1}{2} \sqrt{2 + \sqrt{2}}$ (d) $-\frac{1}{2} \sqrt{2 + \sqrt{2}}$
96. Which one of the following is correct?
(a) $\sin 1^\circ > \sin 1$ (b) $\sin 1^\circ < \sin 1$
(c) $\sin 1^\circ = \sin 1$ (d) $\sin 1^\circ = \frac{\pi}{180} \sin 1$
97. If in general, the value of $\sin A$ is known, but the value of A is not known, then how many values of $\tan\left(\frac{A}{2}\right)$ can be calculated?
(a) 1 (b) 2
(c) 3 (d) 4
98. If $x = \sin \theta + \cos \theta$ and $y = \sin \theta \cdot \cos \theta$, then what is the value of $x^4 - 4x^2y - 2x^2 + 4y^2 + 4y + 1$?
(a) 0 (b) 1
(c) 2 (d) None of these

99. If $(1 + \tan \theta)(1 + \tan \phi) = 2$, then what is $(\theta + \phi)$ equal to?
(a) 30° (b) 45°
(c) 60° (d) 90°
100. If an angle α is divided into two parts A and B such that $A - B = x$ and $\tan A : \tan B = 2 : 1$, then what is $\sin x$ equal to?
(a) $3 \sin \alpha$ (b) $(2 \sin \alpha) / 3$
(c) $(\sin \alpha) / 3$ (d) $2 \sin \alpha$
101. What is the value of $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ$?
(a) 1 (b) 2
(c) 3 (d) 4
102. If $x = y \cos\left(\frac{2\pi}{3}\right) = z \cos\left(\frac{4\pi}{3}\right)$, then what is $xy + yz + zx$ equal to?
(a) -1 (b) 0
(c) 1 (d) 2
103. If $K = \sin\left(\frac{\pi}{18}\right) \sin\left(\frac{5\pi}{18}\right) \sin\left(\frac{7\pi}{18}\right)$, then what is the value of K ?
(a) $\frac{1}{2}$ (b) $\frac{1}{4}$
(c) $\frac{1}{8}$ (d) $\frac{1}{16}$
104. The expression $\frac{\sin \alpha + \sin \beta}{\cos \alpha + \cos \beta}$ is equal to
(a) $\tan\left(\frac{\alpha + \beta}{2}\right)$ (b) $\cot\left(\frac{\alpha + \beta}{2}\right)$
(c) $\sin\left(\frac{\alpha + \beta}{2}\right)$ (d) $\cos\left(\frac{\alpha + \beta}{2}\right)$
105. If $\sin \theta = 3 \sin(\theta + 2\alpha)$, then the value of $\tan(\theta + \alpha) + 2 \tan \alpha$ is equal to
(a) -1 (b) 0
(c) 1 (d) 2
106. What is the value of $\tan 18^\circ$?
(a) $\frac{\sqrt{5}-1}{\sqrt{10+2\sqrt{5}}}$ (b) $\frac{\sqrt{5}-1}{\sqrt{10+\sqrt{5}}}$
(c) $\frac{\sqrt{10+2\sqrt{5}}}{\sqrt{5}-1}$ (d) $\frac{\sqrt{10+\sqrt{5}}}{\sqrt{5}-1}$
107. If $\tan(\alpha + \beta) = 2$ and $\tan(\alpha - \beta) = 1$, then $\tan(2\alpha)$ is equal to
(a) -3 (b) -2
(c) $-\frac{1}{3}$ (d) 1
108. If $\sec \theta - \operatorname{cosec} \theta = \frac{4}{3}$, then what is $(\sin \theta - \cos \theta)$ equal to?
(a) -2 only (b) $\frac{1}{2}$ only
(c) Both -2 and $\frac{1}{2}$ (d) Neither $\frac{1}{2}$ nor -2

109. The value of $\tan 9^\circ - \tan 27^\circ - \tan 63^\circ + \tan 81^\circ$ is equal to

- (a) -1 (b) 0
(c) 1 (d) 4

The value of $\sqrt{3} \operatorname{cosec} 20^\circ - \sec 20^\circ$ is equal to,

- (a) 4 (b) 2
(c) 1 (d) -4

110. Angle α is divided into two parts A and B such that $A+B=x$ and $\tan A : \tan B = p : q$. The value of $\sin x$ is equal to

- (a) $\frac{(p+q)\sin\alpha}{p-q}$ (b) $\frac{p\sin\alpha}{p+q}$
(c) $\frac{p\sin\alpha}{p-q}$ (d) $\frac{(p-q)\sin\alpha}{p+q}$

111. If $x = \sin 70^\circ \cdot \sin 50^\circ$ and $y = \cos 60^\circ \cdot \cos 80^\circ$, then what is xy equal to ?

- (a) 1/16 (b) 1/8
(c) 1/4 (d) 1/2

112. If $\sin \theta_1 + \sin \theta_2 + \sin \theta_3 + \sin \theta_4 = 4$, then what is the value of $\cos \theta_1 + \cos \theta_2 + \cos \theta_3 + \cos \theta_4 = ?$

- (a) 0 (b) 1
(c) 2 (d) 4

113. What is the value of

$$\left(1 + \cos \frac{\pi}{8}\right) \left(1 + \cos \frac{3\pi}{8}\right) \left(1 + \cos \frac{5\pi}{8}\right) \left(1 + \cos \frac{7\pi}{8}\right)$$

- (a) $\frac{1}{2}$ (b) $\frac{1}{2} + \frac{1}{2\sqrt{2}}$
(c) $\frac{1}{2} - \frac{1}{2\sqrt{2}}$ (d) $\frac{1}{8}$

114. If $x \cos \theta + y \sin \theta = z$, then what is the value of $(x \sin \theta - y \cos \theta)^2$?

- (a) $x^2 + y^2 - z^2$ (b) $x^2 - y^2 - z^2$
(c) $x^2 - y^2 + z^2$ (d) $x^2 + y^2 + z^2$

115. If $\sin 18^\circ = \frac{\sqrt{5}-1}{4}$, then what is the value of $\sin 81^\circ$?

- (a) $\frac{\sqrt{3+\sqrt{5}} + \sqrt{5-\sqrt{5}}}{4}$ (b) $\frac{\sqrt{3+\sqrt{5}} + \sqrt{5+\sqrt{5}}}{4}$
(c) $\frac{\sqrt{3-\sqrt{5}} + \sqrt{5-\sqrt{5}}}{4}$ (d) $\frac{\sqrt{3+\sqrt{5}} - \sqrt{5-\sqrt{5}}}{4}$

116. What is $\frac{1 - \tan 2^\circ \cot 62^\circ}{\tan 152^\circ - \cot 88^\circ}$ equal to?

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

117. If $\sin A = \frac{3}{5}$, where $450^\circ < A < 540^\circ$, then $\cos \frac{A}{2}$ is equal to

- (a) $\frac{1}{\sqrt{10}}$ (b) $-\frac{\sqrt{3}}{\sqrt{10}}$
(c) $\frac{\sqrt{3}}{\sqrt{10}}$ (d) None of the above

118. What is $\frac{1}{\sin 10^\circ} - \frac{\sqrt{3}}{\cos 10^\circ}$ equal to?

- (a) 0 (b) 1
(c) 2 (d) 4

119. If $\tan A = x + 1$ and $\tan B = x - 1$, then $x^2 \tan(A - B)$ has the value:

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

120. What is the value of $(\sin^4 \theta - \cos^4 \theta + 1) \operatorname{cosec}^2 \theta$?

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

DAY - 1 Trigonometry Answer Key

1	2	3	4	5	6	7	8	9	10
A	C	A	A	A	B	C	A	D	B
11	12	13	14	15	16	17	18	19	20
B	A	A	D	C	A	B	A	B	C
21	22	23	24	25	26	27	28	29	30
A	B	C	D	B	C	D	C	A	C
31	32	33	34	35	36	37	38	39	40
C	B	C	B	C	C	A	A	C	D
41	42	43	44	45	46	47	48	49	50
B	C	C	C	A	B	C	C	B	A
51	52	53	54	55	56	57	58	59	60
A	C	C	D	A	D	C	D	A	D
61	62	63	64	65	66	67	68	69	70
B	C	B	A	B	A	C	B	B	B
71	72	73	74	75	76	77	78	79	80
B	D	A	D	D	A	B	B	C	D
81	82	83	84	85	86	87	88	89	90
B	C	D	C	D	A	A	C	D	B
91	92	93	94	95	96	97	98	99	100
C	D	A	B	C	B	B	A	B	C
101	102	103	104	105	106	107	108	109	110
D	B	C	A	B	A	A	B	D	A
111	112	113	114	115	116	117	118	119	120
D	A	D	A	A	B	D	D	D	D