



9. Which of the following is correct
 (a) $\sin^2 \theta + \cos^2 \theta = 1$ (b) $\sin^2 \theta + \cos^2 \theta = 2$
 (c) $\sin^2 \theta - \cos^2 \theta = 1$ (d) $\sin^2 \theta - \cos^2 \theta = 2$
10. Which of the following relations is correct [WB JEE 1991]
 (a) $\sin^2 \theta + \cos^2 \theta = 1$ (b) $\sin^2 \theta + \cos^2 \theta = 2$
 (c) $\sin^2 \theta - \cos^2 \theta = 1$ (d) $\sin^2 \theta - \cos^2 \theta = 2$
11. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$, then θ is [MP PET 1998, 2001; AMU 1999; Pb. CET 1994]
 (a) 30° (b) 60°
 (c) 45° (d) 15°
12. If $\sin \theta = \frac{1}{2}$, the value of $\cos \theta$ is [MP PET 2004]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) $-\frac{1}{2}$
13. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [MP PET 1992; MNR 1990; UPSEAT 2002]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) None of these
14. If $\sin \theta = m$ and $\cos \theta = n$, then $\tan \theta$ is [MP PET 1986]
 (a) $\frac{m}{n}$ (b) $\frac{n}{m}$
 (c) $2m$ (d) $2n$
15. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [Karnataka CET 1998]
 (a) 0 (b) 1
 (c) 2 (d) $\frac{1}{2}$
16. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$ lies in the second quadrant, then θ is [MP PET 1997]
 (a) 30° (b) 150°
 (c) 120° (d) 210°
17. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [Roorkee 1995]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) $-\frac{1}{2}$
18. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [Karnataka CET 1998]
 (a) 0 (b) 1
 (c) $\frac{1}{6}$ (d) 6
19. If $\sin \theta = \frac{1}{2}$, $\cos \theta$ will be [MP PET 1994]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) $-\frac{1}{2}$
20. If $\sin \theta = \frac{1}{2}$, then the value of $\cos \theta$ is [UPSEAT 2003]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) None of these
21. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [IIT 1979; Pb. CET 1995; Orissa JEE 2002]
 (a) $-\frac{4}{5}$ but not $\frac{4}{5}$ (b) $-\frac{4}{5}$ or $\frac{4}{5}$
 (c) $\frac{4}{5}$ but not $-\frac{4}{5}$ (d) None of these
22. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$, then θ lies in which quadrant
 (a) First (b) Second
 (c) Third (d) Fourth
23. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$ lies in the third quadrant, then θ is [MP PET 1992; MNR 1990; UPSEAT 2002]
 (a) 30° (b) 150°
 (c) 210° (d) 330°
24. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$ where θ and ϕ are positive acute angles, then $\theta + \phi$ is [MP PET 1997]
 (a) 30° (b) 60°
 (c) 90° (d) None of these
25. If $\sin \theta = \frac{1}{2}$ and $\cos \theta = \frac{\sqrt{3}}{2}$ lies in the fourth quadrant, then θ is [MP PET 1997]
 (a) 30° (b) 330°
 (c) 210° (d) 150°
26. If $\sin \theta = \frac{1}{2}$, then $\cos \theta$ is [Roorkee 1995]
 (a) $\frac{\sqrt{3}}{2}$ (b) $\frac{1}{2}$
 (c) $-\frac{\sqrt{3}}{2}$ (d) None of these
27. If $\sin \theta = \frac{1}{2}$ lies in the second quadrant and $\cos \theta = \frac{\sqrt{3}}{2}$, the value of θ is equal to [Pb. CET 2000]
 (a) 30° (b) 150°
 (c) 210° (d) 330°
28. If $\sin \theta = \frac{1}{2}$, then the value of $\cos \theta$ is [MP PET 1994]
 (a) 1 (b) -1



29. If $\sin^{-1} \frac{1}{\sqrt{2}}$ and $\cos^{-1} \frac{1}{\sqrt{2}}$ are in G.P., then $\tan^{-1} \frac{1}{\sqrt{2}}$ is equal to
 (a) 1 (b) 2 (c) 4 (d) None of these [MP PET 1986]
30. If $\sin^{-1} \frac{1}{\sqrt{2}}$ lies in the second quadrant, then the value of $\cos^{-1} \frac{1}{\sqrt{2}}$ is
 (a) 1 (b) 2 (c) 4 (d) None of these
31. If $\sin^{-1} \frac{1}{\sqrt{2}}$ and $\cos^{-1} \frac{1}{\sqrt{2}}$ are in G.P., then $\tan^{-1} \frac{1}{\sqrt{2}}$ is equal to [Karnataka CET 1998]
 (a) 0 (b) 1 (c) 4 (d) None of these [Roorkee 1975]
32. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ equals [AMU 2002]
 (a) 1 (b) 2 (c) 4 (d) None of these
33. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ is equal to [WB JEE 1988]
 (a) 1 (b) 2 (c) 4 (d) None of these
34. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ is equal to [MP PET 1994]
 (a) 1 (b) 2 (c) 4 (d) None of these
35. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ [MP PET 1986]
 (a) 1 (b) 2 (c) 4 (d) None of these
36. If $\sin^{-1} \frac{1}{\sqrt{2}}$, then $\cos^{-1} \frac{1}{\sqrt{2}}$ [Karnataka CET 2004]
 (a) 1 (b) 2 (c) 4 (d) None of these [MP PET 1991]
37. If $\sin^{-1} \frac{1}{\sqrt{2}}$, then $\cos^{-1} \frac{1}{\sqrt{2}}$ [AMU 1998]
 (a) 1 (b) 2 (c) 4 (d) None of these
38. The value of $\sin^{-1} \frac{1}{\sqrt{2}}$ is (a) 0 (b) e (c) $1/e$ (d) None of these [MP PET 2001]
39. $\sin^{-1} \frac{1}{\sqrt{2}}$ and $\cos^{-1} \frac{1}{\sqrt{2}}$ are in G.P., then $\tan^{-1} \frac{1}{\sqrt{2}}$ is equal to (a) 1 (b) 2 (c) 4 (d) None of these [MP PET 1986]
40. $\sin^{-1} \frac{1}{\sqrt{2}}$ lies in the second quadrant, then the value of $\cos^{-1} \frac{1}{\sqrt{2}}$ is (a) 1 (b) 2 (c) 4 (d) None of these
41. If $\sin^{-1} \frac{1}{\sqrt{2}}$ and $\cos^{-1} \frac{1}{\sqrt{2}}$ are in G.P., then $\tan^{-1} \frac{1}{\sqrt{2}}$ is equal to [Karnataka CET 1998] (a) 0 (b) 1 (c) 4 (d) None of these [Roorkee 1975]
42. The value of the expression $\sin^{-1} \frac{1}{\sqrt{2}}$ is equal to (a) 0 (b) 1 (c) 4 (d) None of these
43. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ [WB JEE 1988]
 (a) 4 (b) -4 (c) ± 4 (d) None of these
44. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ is equal to [Kerala (Engg.) 2002]
 (a) 110 (b) 191 (c) 80 (d) 194
45. If $\sin^{-1} \frac{1}{\sqrt{2}}$ then $\cos^{-1} \frac{1}{\sqrt{2}}$ [MP PET 1986]
 (a) 1 (b) 2 (c) 4 (d) None of these
46. If $\sin^{-1} \frac{1}{\sqrt{2}}$ and $\cos^{-1} \frac{1}{\sqrt{2}}$, then $\tan^{-1} \frac{1}{\sqrt{2}}$ [MP PET 1991]
 (a) 1 (b) 2 (c) 4 (d) None of these
47. If $\sin^{-1} \frac{1}{\sqrt{2}}$, and $\cos^{-1} \frac{1}{\sqrt{2}}$ then $\tan^{-1} \frac{1}{\sqrt{2}}$ [MP PET 2001]
 (a) 1 (b) 2 (c) 4 (d) None of these



48. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then $\alpha + \beta =$ [IIT 1970]
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) π
49. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) =$ [WB JEE 1986]
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) π
50. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then $\alpha + \beta =$ [Kurukshehra CEE 1998]
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) None of these
51. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) =$ [EAMCET 1994]
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) π
52. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then which of the following is correct [WB JEE 1979]
- (a) $\alpha + \beta = \frac{\pi}{2}$ (b) $\alpha + \beta = \frac{3\pi}{4}$ (c) $\alpha + \beta = \frac{\pi}{4}$ (d) $\alpha + \beta = \pi$
53. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then $\alpha + \beta =$ [MP PET 1995, 2002; DCE 2005]
- (a) 0 (b) $-\frac{\pi}{2}$ (c) $\frac{\pi}{2}$ (d) None of these
54. The value of $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) + \cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is [MP PET 1997; UPSEAT 2002]
- (a) 2 (b) 0 (c) 4 (d) 6
55. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$, then the value of $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is equal to [Pb. CET 2002]
- (a) 0 (b) 1 (c) $-\frac{\pi}{2}$ (d) $\frac{\pi}{2}$
56. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then the value of $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is [Karnataka CET 1999; DCE 2005]
- (a) 1 (b) $-\frac{\pi}{2}$ (c) 0 (d) $\frac{\pi}{2}$
57. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) =$ [Pb. CET 2003]
- (a) 1 (b) 0 (c) $-\frac{\pi}{2}$ (d) None of these
58. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then $\alpha + \beta =$ [WB JEE 1984]
- (a) $-\frac{\pi}{2}$ (b) $\frac{\pi}{2}$ (c) 1 (d) None of these
59. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then each side is equal to
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) π
60. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$, then $\alpha + \beta =$ [Kurukshehra CEE 1998]
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{2}$ (c) $\frac{3\pi}{4}$ (d) π
61. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) =$ [EAMCET 1994]
- (a) 3 (b) 2 (c) 1 (d) 0
62. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$, then x must be [UPSEAT 2004]
- (a) $-\frac{\pi}{2}$ (b) $-\frac{\pi}{4}$ (c) 1 (d) None of these
63. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ and $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right) = \beta$ then $\alpha + \beta =$ [WB JEE 1979]
- (a) 2 (b) $-\frac{\pi}{2}$ (c) ± 4 (d) 4
64. If $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) = \alpha$ then the value of $\cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is
- (a) 0 (b) $-\frac{\pi}{2}$ (c) 1 (d) None of these
65. The value of $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) + \cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is [Karnataka CET 1999; DCE 2005]
- (a) 0 (b) 1 (c) 2 (d) $\frac{\pi}{2}$
66. The value of $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) + \cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is [Karnataka CET 1999]
- (a) 2 (b) 3 (c) 1 (d) 0
67. The value of $\sin^{-1} \left(\frac{1}{\sqrt{2}} \right) + \cos^{-1} \left(\frac{1}{\sqrt{2}} \right)$ is [Pb. CET 2003]
- (a) 1 (b) 0 (c) $-\frac{\pi}{2}$ (d) None of these



68. $\sin^{-1}(\sin \frac{5\pi}{6}) =$ (a) $\frac{5\pi}{6}$
(b) $\frac{\pi}{6}$
 (a) 0 (b) 1
 (c) $-\frac{\pi}{6}$ (d) 2
 [Karnataka CET 2003]
69. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin x =$ (a) $\frac{1}{8}$
(b) $\frac{1}{4}$
 equals (c) $\frac{1}{2}$
(d) $\frac{3}{4}$
 [AMU 1999]
70. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ is (a) 1
(b) $\frac{\pi}{6}$
(c) $\frac{5\pi}{6}$
(d) $\frac{7\pi}{6}$
 [MP PET 2001]
71. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) $-\frac{1}{2}$
(b) 0
(c) 1
(d) $\frac{1}{2}$
 [MP PET 1992]
72. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ is (a) 0
(b) $\frac{\pi}{6}$
(c) $\frac{5\pi}{6}$
(d) $\frac{7\pi}{6}$
 [MNR 1975]
73. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ is zero, if (a) 0
(b) $\frac{\pi}{6}$
(c) $\frac{5\pi}{6}$
(d) $\frac{7\pi}{6}$
 [MNR 1984]
74. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin 2x =$ (a) $\frac{1}{2}$
(b) $-\frac{1}{2}$
(c) $\frac{1}{4}$
(d) 1
 [MNR 1984]
75. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos 2x =$ (a) $\frac{1}{2}$
(b) 4
(c) 8
(d) 16
 [CET 1989]
76. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$ and $\cos^{-1}(\cos \frac{5\pi}{6}) = y$, then $x + y =$ (a) 2
(b) 4
(c) 8
(d) 16
 [CET 1989]
77. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) $-\frac{1}{2}$
(b) 0
(c) 1
(d) None of these
 [MP PET 1990]
78. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin 2x =$ (a) 1
(b) $-\frac{1}{2}$
(c) 0
(d) 2
 [Roorkee 1972]
79. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) $-\frac{1}{2}$
(b) 0
(c) 1
(d) $\frac{1}{2}$
 [MNR 1973]
80. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin x =$ (a) 0
(b) $\frac{\pi}{6}$
(c) $\frac{5\pi}{6}$
(d) $\frac{7\pi}{6}$
 [EAMCET 1980]
81. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) 0
(b) $\frac{\pi}{6}$
(c) 1
(d) $\frac{1}{2}$
 [MP PET 1992]
82. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin 2x =$ (a) 0
(b) $\frac{\pi}{6}$
(c) 1
(d) $\frac{1}{2}$
 [EAMCET 1981]
83. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos 2x =$ (a) 1
(b) 0
(c) $\frac{1}{2}$
(d) None of these
 [EAMCET 1981]
84. If angle θ be divided into two parts such that the tangent of one part is n times the tangent of the other and d is their difference, then $\tan \theta =$ (a) $\frac{1}{n}$
(b) $\frac{1}{n-1}$
(c) $\frac{1}{n+1}$
(d) None of these
85. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) $-\frac{1}{2}$
(b) 0
(c) 1
(d) 2
 [EAMCET 1994]
86. Given that $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then the expression $\cos 2x$ is equal to (a) 2
(b) $\frac{1}{2}$
(c) $\frac{1}{4}$
(d) None of these
87. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\sin x =$ (a) 1
(b) $-\frac{1}{2}$
(c) 0
(d) 2
88. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x =$ (a) 1
(b) $-\frac{1}{2}$
(c) 0
(d) 2
 [Roorkee 1972]



89. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ is [MP PET 1997]
- (a) 0 (b) 1 (c) $\frac{1}{2}$ (d) 2
90. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [CET 1989]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
91. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ when $x \in [0, \frac{\pi}{2}]$ is [MP PET 1990]
- (a) $\frac{\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) 0 (d) 1
92. The value of $\sin^{-1}(\sin \frac{5\pi}{6})$ is [Karnataka CET 2005]
- (a) 0 (b) $-\frac{1}{2}$ (c) $\frac{1}{2}$ (d) 1
93. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$ and $\cos^{-1}(\cos \frac{5\pi}{6}) = y$, then total number of ordered pair of (x, y) is [IIT Screening 2005]
- (a) 0 (b) 1 (c) 2 (d) 4
5. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1979]
- (a) 1 (b) 0 (c) $\frac{1}{2}$ (d) 2
6. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1977]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
7. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$ where $x \in [0, \frac{\pi}{2}]$, then $\cos x$ is equal to [J & K 2005]
- (a) 9 (b) 4 (c) 27 (d) 81
8. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1979]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
9. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$ and $\cos^{-1}(\cos \frac{5\pi}{6}) = y$, then [IIT 1978; EAMCET 1992; Roorkee 1998; JMI EEE 2001]
- (a) $\frac{\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) $\frac{\pi}{6}$ (d) None of these

Trigonometrical ratios of sum and difference of two and three angles

1. If $\sin A = \frac{1}{2}$ and $\cos B = \frac{1}{2}$ where A and B are positive acute angles, then [MP PET 1986]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$
2. If $\sin A = \frac{1}{2}$ then $\cos A$ is [MNR 1979]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$
3. If $\sin A = \frac{1}{2}$ then the value of $\cos A$ is [MP PET 1986]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$
4. If $\sin A = \frac{1}{2}$ and $\cos B = \frac{1}{2}$ then $\sin(A+B)$ is [EAMCET 1994]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{1}{2}$ (d) $\frac{\sqrt{3}}{2}$
10. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1982; Pb. CET 1990, 2000]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
11. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1982; Pb. CET 1990, 2000]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
12. $\sin^{-1}(\sin \frac{5\pi}{6}) = x$, then $\cos x$ is [MNR 1982; Pb. CET 1990, 2000]
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$ (c) $\frac{\sqrt{3}}{2}$ (d) None of these
13. If $\sin^{-1}(\sin \frac{5\pi}{6}) = x$ and $\cos^{-1}(\cos \frac{5\pi}{6}) = y$, then [IIT 1967; MNR 1987; MP PET 1989]
- (a) $\frac{\pi}{6}$ (b) $\frac{5\pi}{6}$ (c) $\frac{\pi}{6}$ (d) None of these



- (c) (d) None of these 22. If then
14. If then [MNR 1974] (a) 1 (b) -1 (c) 0 (d) 1/2
23. The value of [MP PET 2001; EAMCET 2003] (a) (b) (c) (d) None of these
15. If and where A and B lie in first and third quadrant respectively, then (a) (b) (c) (d) -
24. If and then is equal to (a) (b) (c) (d)
16. If then (a) 1 (b) 2 (c) (d) -2
25. The expression is (a) Dependent on B (b) Dependent on A and B (c) Dependent on A (d) Independent of A and B
17. = [IIT 1974] 26. The value of is equal to [MNR 1975; MP PET 1994, 2002] (a) 0 (b) 1 (c) 2 (d) 4
18. If then = [MP PET 1992] (a) $(-1, -1)$ (b) $(-1, 1)$ (c) $(1, -1)$ (d) $(1, 1)$
27. If are the roots of the equation then (a) (b) (c) (d) 0
19. [MP PET 1993] (a) (b) (c) (d)
20. If and lie between 0 and then [IIT 1979; EAMCET 2002] (a) (b) (c) (d) None of these
28. [EAMCET 1991] (a) (b) (c) 0 (d) None of these
21. If and lies in the 1st quadrant, then the value of is (a) (b) (c) (d)
29. If equals the integral solution of the inequality and equals to the slope of the bisector of first quadrant, then is equal to [Kerala (Engg.) 1993] (a) (b) (c) (d)
30. is equal to



31. The value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is **[Kerala (Engg.) 1993]**
- (a) $\frac{1}{2}$ (b) 1
(c) $\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$
32. The value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is **[MP PET 1997; Pb. CET 1995, 99]**
- (a) 0 (b) 1
(c) 2 (d) $\frac{1}{2}$
33. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ **[MP PET 1998]**
- (a) $\frac{1}{2}$ (b) 1
(c) $\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$
34. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ **[EAMCET 1992; Kerala (Engg.) 2005]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) None of these
35. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ **[CET 1986; MP PET 1999]**
- (a) 1 (b) $\frac{1}{2}$
(c) $\frac{1}{\sqrt{2}}$ (d) $\frac{1}{\sqrt{3}}$
36. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$ then **[MP PET 1997]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
37. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ **[DCE 1999]**
- (a) 0 (b) $\frac{1}{2}$
(c) -1 (d) 1
38. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$, then the value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is **[Roorkee 2000]**
- (a) $-\frac{171}{221}$ (b) $-\frac{21}{221}$
(c) $\frac{21}{221}$ (d) $\frac{171}{221}$
39. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$ then **[Karnataka CET 2001]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
40. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$, then θ is equal to **[AMU 2001]**
- (a) $\frac{\pi}{4}$ (b) $\frac{\pi}{3}$
(c) $\frac{\pi}{6}$ (d) $\frac{\pi}{2}$
41. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ **[MP PET 2002]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
42. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$ where P and Q both are acute angles. Then the value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is **[Karnataka CET 2002]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
43. $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is equal to **[DCE 2002]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
44. If $\sin^2 \theta + \cos^2 \theta = 1$ and $\sin^2 \theta + \cos^2 \theta = 1$, then $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ equals **[AMU 2002]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
45. The sum $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ equals **[AMU 2002]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$
(c) $\frac{1}{\sqrt{3}}$ (d) 1
46. The value of $\frac{\sin^2 \theta + \cos^2 \theta}{\sin^2 \theta + \cos^2 \theta}$ is **[Orissa JEE 2003]**
- (a) $\frac{1}{2}$ (b) $\frac{1}{\sqrt{2}}$



- (c) (d) (d) None of these
47. The expression is equal [UPSEAT 2004] 57. If then the value of is [Roorkee 1995]
- (a) -1 (b) 0 (a) (b)
- (c) 1 (d) None of these (c) (d)
48. If and 58. [EAMCET 1989]
- Then will be [Orissa JEE 2004] (a)
- (a) (b)
- (c) (d) -56 (d) None of these
49. If and then 59. [MNR 1982; Pb. CET 1991]
- (a) (b) (a)
- (c) (d) (b)
- (c) (d) None of these (c)
50. [IIT 1982; Kerala (Engg.) 2001] 60. (d) None of these
- (a) 1/16 (b) 1/32 (a) (b)
- (c) 1/8 (d) 1/4 (c) (d)
51. 61. [Roorkee 1989]
- (a) 1/16 (b) 0 (a) 1/2 (b) 2
- (c) -1/8 (d) -1/16 (c) 4 (d) 8
52. [MP PET 1991] 62. [Roorkee 1973]
- (a) 1 (b) -1 (a) (b)
- (c) 0 (d) None of these (c) (d)
53. [IIT 1974] 63. [MP PET 2000]
- (a) 1 (b) 2 (a) 0 (b) 1/2
- (c) 3 (d) (c) 1 (d) None of these
54. [MP PET 1989] 64. The value of is [MP PET 1994]
- (a) 1/2 (b) 1/4 (a) -1 (b) 1
- (c) 1/6 (d) 1/8 (c) (d)
55. [IIT 1965]
- (a) 1/4 (b) 1/16 (c) (d)
- (c) 3/4 (d) 5/16
56. If then [MNR 1990] 65. [MP PET 1991]
- (a) (a) (b) 0
- (b) (c) (d)
- (c) 66. [EAMCET 2001]



- (a) (b) 0 (c) (d)
67. If then (a) (b) (c) (d) [Roorkee 1974]
68. [Roorkee 1970; IIT 1966] (a) A.P. (b) G.P. (c) H.P. (d) None of these
69. If then is equal to (a) (b) (c) (d) None of these [Karnataka CET 2002]
70. If and then (a) (b) (c) (d) None of these [MP PET 2004]
71. The expression is equal to (a) (b) (c) (d) [EAMCET 2002]
72. [EAMCET 2003] (a) 0 (b) 1/2 (c) 1 (d) [MP PET 1998]
73. (a) (b) (c) (d) None of these [Karnataka CET 2003]
74. If then [IIT 1966] (a) 1 (b) 2 (c) 3 (d) 0
75. (a) (b) (c) (d) [Roorkee 1974]
76. (a) (b) (c) (d) None of these [Roorkee 1974]
77. If then A, B, C are in (a) A.P. (b) G.P. (c) H.P. (d) None of these
78. = [IIT 1985] (a) 1/2 (b) 1/4 (c) 1/8 (d) 1/16
79. The value of is (a) (b) (c) (d) [Karnataka CET 2002]
80. The value of is (a) (b) (c) (d) [MP PET 2004]
81. (a) - 1/4 (b) 1/2 (c) 0 (d) 3/4 [EAMCET 2002]
82. (a) 0 (b) (c) (d) [MP PET 1998]
83. The value of [Karnataka CET 2003] (a) 1 (b) 2 (c) 3 (d) 0
84. is equal to [MP PET 1993] (a) (b)



85. The value of $\frac{\sin 2A}{\sin A} + \frac{\cos 2A}{\cos A}$ is equal to
- (a) $\frac{3}{2}$ (b) 1
 (c) $\frac{1}{2}$ (d) 0
- [AMU 2005]
- (a) 1 (b) 0
 (c) (d) None of these

8. If $\sin A = \frac{1}{2}$, then $\cos A$ is
- (a) A.P. (b) G.P.
 (c) H.P. (d) None of these
- [EAMCET 1981, 82; MP PET 1996; J & K 2005]
- (a) (b)
 (c) (d)

Trigonometrical ratios of multiple and sub-multiple angles

1. If $\sin A = \frac{1}{2}$, then $\sin 2A$ is
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$
 (c) $\frac{\sqrt{3}}{4}$ (d) $\frac{1}{4}$
- [MP PET 1998]

9. If $\sin A = \frac{1}{2}$, then $\cos 2A$ is
- (a) (b)
 (c) (d)
10. If $\sin A = \frac{1}{2}$, then $\sin 4A$ is
- (a) (b)
 (c) (d)

2. If $\sin A = \frac{1}{2}$ and $\cos A = \frac{\sqrt{3}}{2}$ where A and B are positive acute angles, then $\sin(A+B)$ is
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$
 (c) $\frac{\sqrt{3}}{4}$ (d) $\frac{1}{4}$
- [MP PET 1988]

11. If $\sin A = \frac{1}{2}$, then $\sin 3A$ is
- (a) (b)
 (c) (d) None of these
12. If $\sin A = \frac{1}{2}$, then $\sin 5A$ is
- (a) (b)
 (c) (d)

3. If $\sin A = \frac{1}{2}$, then $\sin 7A$ is
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$
 (c) $\frac{\sqrt{3}}{4}$ (d) $\frac{1}{4}$

13. If $\sin A = \frac{1}{2}$, then $\sin 9A$ is
- (a) (b)
 (c) (d)
14. If $\sin A = \frac{1}{2}$, then $\sin 11A$ is
- (a) (b)
 (c) (d)

4. If $\sin A = \frac{1}{2}$, then $\sin 13A$ is
- (a) $\frac{1}{2}$ (b) $\frac{\sqrt{3}}{2}$
 (c) $\frac{\sqrt{3}}{4}$ (d) $\frac{1}{4}$
5. If $\sin A = \frac{1}{2}$, then $\sin 15A$ is
- (a) (b)
 (c) (d)

15. If $\sin A = \frac{1}{2}$, then $\sin 17A$ is
- (a) (b)
 (c) (d)
- [MP PET 1990, 2002]

6. $\sin 2A + \sin 4A + \sin 6A$ can be written as
- (a) $2 \sin 4A \cos 2A$
 (b) $2 \sin 2A \cos 4A$
 (c) $2 \sin 2A \cos 6A$
 (d) None of these

16. If $\sin A = \frac{1}{2}$, then $\sin 19A$ is
- (a) (b)
 (c) (d)

7. If $\sin A = \frac{1}{2}$, then $\sin 21A$ are in

