Trigonometric Identities

1. Distance r of the point $P(x_1, y_1)$ from the origin is given by the relation r = _____ ?

a) $x_1^2 + y_1^2$
b) $\sqrt{x_1^2 + y_1^2}$
c) $\sqrt{x_1^2 + y_1^2 + 2x_1y_1}$
d) $\sqrt{x_1^2}$
e) none of these

2. If $\text{Sin}\,\theta_1 = \text{Sin}\,\theta_2$ and $\text{Cos}\,\theta_1 = \text{Cos}\,\theta_2$ then

a) $\sin\frac{1}{2}(\theta_1 + \theta_2) = 0$
b) $\sin\frac{1}{2}(\theta_1 - \theta_2) = 0$
c) $\cos\frac{1}{2}(\theta_1 + \theta_2) = 0$
d) $\cos\frac{1}{2}(\theta_2 - \theta_1) = -1$
e) none of these

3. Distance r of the point P(1, 2) from the origin O(0, 0) is given by the relation r = ___ ?

a) 5
b) $\sqrt{5}$
c) 25
d) $\sqrt{3}$
e) None of these

4. $\cos(\alpha - \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

5. $\cos(\alpha + \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

6. $\sin(\alpha - \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

7. $\sin(\alpha + \beta) =$

a) $\cos\alpha\cos\beta - \sin\alpha\sin\beta$
b) $\cos\alpha\cos\beta + \sin\alpha\sin\beta$
c) $\sin\alpha\cos\beta - \cos\alpha\sin\beta$
d) $\sin\alpha\cos\beta + \cos\alpha\sin\beta$
e) $\sin\alpha\sin\beta - \cos\alpha\cos\beta$

8. $\cos(-\alpha) =$

a) $\sec\alpha$
b) $-\sin\alpha$
c) $\sin\alpha$
d) $-\cos\alpha$
e) $\cos\alpha$

9. $\sin(-\alpha) =$

a) $\sec\alpha$
b) $-\sin\alpha$
c) $\sin\alpha$
d) $-\cos\alpha$
e) $\cos\alpha$

10. $\cot(-\alpha) =$

a) $-\tan\alpha$
b) $\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\cos\alpha$

11. $\tan(-\alpha) =$

a) $-\tan\alpha$
b) $\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\cos\alpha$

12. $\sec(-\alpha) =$

a) $-\cos\alpha$
b) $-\sec\alpha$
c) $\sec\alpha$
d) $\text{cosec}\,\alpha$
e) $-\text{cosec}\,\alpha$

13. $\cos(90^\circ - \alpha) =$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\text{cosec}\,\alpha$

14. $\sin(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\text{cosec}\,\alpha$

15. $\tan(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\sin\alpha$
d) $-\cot\alpha$
e) $\cot\alpha$

16. $\cot(90^\circ - \alpha) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\sin\alpha$
d) $-\cot\alpha$
e) $\cot\alpha$

17. $\sec(90^\circ - \alpha) =$

a) $-\text{cosec}\,\alpha$
b) $\text{cosec}\,\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

18. $\cos(\alpha - 90^\circ) =$

a) $-\text{cosec}\,\alpha$
b) $\text{cosec}\,\alpha$
c) $-\sec\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

19. $\cos ec(90^\circ - \alpha) =$

a) $-\text{cosec}\,\alpha$
b) $\text{cosec}\,\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

20. $\sec(\alpha - 90^\circ) =$

a) $\text{cosec}\,\alpha$
b) $-\sec\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

21. $\sin(\alpha - 90^\circ) =$

a) $-\cos\alpha$
b) $\text{cosec}\,\alpha$
c) $-\sec\alpha$
d) $\sin\alpha$
e) $\cos\alpha$

22. $\tan(\alpha - 90^\circ) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

23. $\cos ec(\alpha - 90^\circ) =$

a) $\text{cosec}\,\alpha$
b) $-\sec\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

24. $\cos\left(\frac{\pi}{2} - \alpha\right) =$

a) $\text{cosec}\,\alpha$
b) $\cos\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

25. $\sin\left(\frac{\pi}{2} - \alpha\right) =$

a) $\text{cosec}\,\alpha$
b) $\cos\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

26. $\cot\left(\frac{\pi}{2} - \alpha\right) =$

a) $\cot\alpha$
b) $\tan\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

27. $\tan\left(\frac{\pi}{2} - \alpha\right) =$

a) $\cot\alpha$
b) $\tan\alpha$
c) $-\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

28. $\cos\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\cos\alpha$
c) $\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

29. $\sin\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\cos\alpha$
c) $\cos\alpha$
d) $-\sin\alpha$
e) $\sin\alpha$

30. $\tan\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

31. $\sec\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $\cot\alpha$
c) $\text{cosec}\,\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

32. $\cos ec\left(\alpha - \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $\text{cosec}\,\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

33. $\cos(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $\sin\alpha$
c) $\cos\alpha$
d) $-\cos\alpha$
e) $-\tan\alpha$

34. $\sin(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $\sin\alpha$
c) $\cos\alpha$
d) $-\cos\alpha$
e) $-\tan\alpha$

35. $\cot(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $-\cot\alpha$
c) $\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

36. $\csc(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $\sec\alpha$

37. $\cos\left(\frac{\pi}{2} + \alpha\right) =$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $\sec\alpha$

38. $\sin\left(\frac{\pi}{2} + \alpha\right) =$

a) $-\sin\alpha$
b) $-\csc\alpha$
c) $-\sec\alpha$
d) $\cos\alpha$
e) $\sec\alpha$

39. $\tan(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $-\cot\alpha$
c) $\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

40. $\sec(\alpha + 90^\circ) =$

a) $-\sin\alpha$
b) $\sec\alpha$
c) $-\sec\alpha$
d) $\csc\alpha$
e) $-\csc\alpha$

41. $\sec\left(\alpha + \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

42. $\sin(\pi + \alpha) =$

a) $\cos\alpha$
b) $-\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

43. $\csc(\pi - \alpha) =$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $-\csc\alpha$
d) $\csc\alpha$
e) $-\tan\alpha$

44. $\cot(\pi - \alpha) =$

a) $\sin\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

45. $\csc\left(\alpha + \frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

46. $\sin(\pi - \alpha) =$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\sec\alpha$

47. $\sec(\pi - \alpha) =$

a) $\sec\alpha$
b) $-\sec\alpha$
c) $-\csc\alpha$
d) $\csc\alpha$
e) $-\tan\alpha$

48. $\cos(\pi+\alpha) =$

a) $\cos\alpha$
b) $-\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $\cot\alpha$

49. $\tan(\pi-\alpha) =$

a) $\sin\alpha$
b) $\cot\alpha$
c) $-\cot\alpha$
d) $\tan\alpha$
e) $-\tan\alpha$

50. $\cos(\pi-\alpha) =$

a) $-\cos\alpha$
b) $\cos\alpha$
c) $-\sin\alpha$
d) $\sin\alpha$
e) $-\sec\alpha$

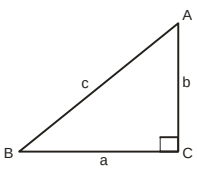
51. $\csc\left(\alpha+\frac{\pi}{2}\right) =$

a) $\sec\alpha$
b) $-\csc\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $-\sec\alpha$

52. If $y=\frac{2\sin\alpha}{1+\cos\alpha+\sin\alpha}$ then $\frac{1-\cos\alpha+\sin\alpha}{1+\sin\alpha}$ is equal to

a) 1/y
b) Y
c) 1 – y
d) 1 + y
e) None of these

53. In the triangle ABC, where C is the right angle, tan A + tan B =



a) $a + b$
b) $\frac{a^2+b^2}{ab}$
c) a^2/bc
d) b^2/ac
e) None of these

54. $Sin(2\pi-\theta) =$ _____

a) $\text{Sin}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Cos}\,\theta$
d) $-\text{Cos}\,\theta$
e) $\text{Tan}\,\theta$

55. The value of the expression $\frac{1-\sin^2 y}{1+\cos y}+\frac{1-\cos y}{\sin y}-\frac{\sin y}{1-\cos y}$ is

a) 0
b) 1
c) Sin y
d) Cos y
e) None of these

56. $Cos(2\pi-\theta) =$ _____ ?

a) $\sin\theta$
b) $-\sin\theta$
c) $\cos\theta$
d) $-\cos\theta$
e) $\tan\theta$

57. $\cot(\alpha-\beta) =$

a) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$
b) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$
c) $\frac{\cot\alpha\cot\beta-1}{\cot\alpha+\cot\beta}$
d) $\frac{\cot\alpha\cot\beta+1}{-\cot\alpha+\cot\beta}$
e) none of these

58. $\tan(\alpha-\beta) =$

a) $\frac{\tan\alpha-\tan\beta}{1+\tan\alpha\tan\beta}$

b) $\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$

c) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$

d) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$

e) none of these

59. $\tan(\pi+\alpha)=$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\sec\alpha$

60. $\sec(\pi+\alpha)=$

a) $\tan\alpha$
b) $-\csc\alpha$
c) $\csc\alpha$
d) $-\sec\alpha$
e) $\sec\alpha$

61. $\csc(\pi+\alpha)=$

a) $\tan\alpha$
b) $-\csc\alpha$
c) $\csc\alpha$
d) $-\sec\alpha$
e) $\sec\alpha$

62. $\tan(\alpha+\beta)=$

a) $\frac{\tan\alpha-\tan\beta}{1+\tan\alpha\tan\beta}$

b) $\frac{\tan\alpha+\tan\beta}{1-\tan\alpha\tan\beta}$

c) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$

d) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$

e) none of these

63. $\cot(\alpha+\beta)=$

a) $\frac{\cot\alpha-\cot\beta}{1+\cot\alpha\cot\beta}$

b) $\frac{\cot\alpha+\cot\beta}{1-\cot\alpha\cot\beta}$

c) $\frac{\cot\alpha\cot\beta-1}{\cot\alpha+\cot\beta}$

d) $\frac{\cot\alpha\cot\beta+1}{\cot\alpha+\cot\beta}$

e) none of these

64. $2\cos^2\left(\frac{\alpha}{2}\right)=$

a) $1+\cos\alpha$
b) $1-\cos\alpha$
c) $1+\sin\alpha$
d) $1-\sin\alpha$
e) $1-2\sin^2\alpha$

65. $\sin\alpha\ =$

a) $1-2\sin^2\frac{\alpha}{2}$

b) $2\cos^2\frac{\alpha}{2}+1$

c) $\sin\frac{\alpha}{2}\cos\frac{\alpha}{2}$

d) $2\sin\frac{\alpha}{2}\cos\frac{\alpha}{2}$

e) $1-2\sin^2\alpha$

66. $\cos\alpha\ =$

a) $\cos^2\frac{\alpha}{2}+\sin^2\frac{\alpha}{2}$

b) $\cos^2\frac{\alpha}{2}-\sin^2\frac{\alpha}{2}$

c) $\cos^2\alpha-\sin^2\alpha$

d) $\cos^2\alpha+\sin^2\alpha$

e) $2\sin\alpha$

67. $\cos\alpha=$

a) $1-2\sin^2\frac{\alpha}{2}$

b) $2\cos^2\frac{\alpha}{2}+1$

c) $2\cos^2\alpha-1$

d) $2\cos^2\alpha+1$

e) $1-2\sin^2\alpha$

68. $2\sin^2\left(\frac{\alpha}{2}\right) =$

a) $1+\cos\alpha$
b) $1-\cos\alpha$
c) $1+\sin\alpha$
d) $1-\sin\alpha$
e) $1-2\sin^2\alpha$

69. $Tan(2\pi-\theta) =$ _____?

a) $Cot\theta$
b) $-Cot\theta$
c) $Tan\theta$
d) $-Tan\theta$
e) $-Cot\theta$

70. $Cos(2\pi+\theta) =$ _____?

a) $\text{Sin}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Cos}\,\theta$
d) $-\text{Cos}\,\theta$
e) $\text{Cot}\,\theta$

71. $Tan(2\pi+\theta) =$ _____?

a) $\text{Cot}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Tan}\,\theta$
d) $-\text{Tan}\,\theta$
e) $-\text{Tan}\ \theta$

72. $Sin(2\pi+\theta) =$

a) $\text{Sin}\,\theta$
b) $-\text{Sin}\,\theta$
c) $\text{Cos}\,\theta$
d) $-\text{Cos}\,\theta$
e) $-\text{Cosec}\,\theta$

73. $1+Cos2\alpha =$

a) $2\sin\alpha$
b) $2\cos\alpha$
c) $2\sec\alpha$
d) $2\sin^2\alpha$
e) $2\cos^2\alpha$

74. $\text{Cos}2\alpha$ =

a) $1+\cos\alpha$
b) $1\sin^2\alpha + 1$
c) $2\cos^2\alpha - 1$
d) $2\cos^2\alpha + 1$
e) $\text{Cos}^2\alpha - 1$

75. $\text{Sin}2\alpha =$

a) $\text{Cos}^2\alpha - \text{Sin}^2\alpha$
b) $2\text{Sin}^2\alpha + 1$
c) $2\text{Sin}\alpha\ \text{Cos}\alpha$
d) $\text{Sin}\alpha\ \text{Cos}\alpha$
e) $2\text{Cos}^2\alpha - 1$

76. $\text{Cos}2\alpha$ =

a) $\cos^2\alpha + \sin^2\alpha$
b) $2\sin^2\alpha + 1$
c) $2\sin^2\alpha - 1$
d) $2\cos^2\alpha + 1$
e) $2\cos^2\alpha - 1$

77. $\text{Sin}\alpha$ =

a) $\pm\sqrt{\frac{1-\cos 2\alpha}{2}}$
b) $\pm\sqrt{\frac{1+\cos 2\alpha}{2}}$
c) $\pm\sqrt{\frac{1+\sin 2\alpha}{2}}$
d) $\pm\sqrt{\frac{1-\sin 2\alpha}{2}}$
e) $\pm\sqrt{\frac{1+\sec 2\alpha}{2}}$

78. $1 + \cos4\alpha$ =

a) $2\cos^2\alpha$
b) $4\sin^2\alpha$
c) $4\cos^2\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 2\alpha$

79. $1 - \cos4\alpha$ =

a) $2\cos^2\alpha$
b) $4\sin^2\alpha$
c) $4\cos^2\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 2\alpha$

80. $\text{Cos}\,\alpha$ =

a) $\pm\sqrt{\frac{1-\cos 2\alpha}{2}}$

b) $\pm\sqrt{\frac{1+\cos 2\alpha}{2}}$

c) $\pm\sqrt{\frac{1+\sin 2\alpha}{2}}$

d) $\pm\sqrt{\frac{1-\sin 2\alpha}{2}}$

e) $\pm\sqrt{\frac{1+\sec 2\alpha}{2}}$

81. $1-\cos 3\alpha$ =

a) $2\cos^2\left(\frac{3\alpha}{2}\right)$

b) $2\sin^2\left(\frac{3\alpha}{2}\right)$

c) $\frac{3}{2}\cos^2\left(\frac{3\alpha}{2}\right)$

d) $2\sin^2 2\alpha$

e) $2\cos^2 3\alpha$

82. $1+\cos 6\alpha =$

a) $3\sin^2\alpha$

b) $2\sin^2 3\alpha$

c) $3\sin^2 3\alpha$

d) $2\sin^2 2\alpha$

e) $2\cos^2 3\alpha$

83. $1-\cos 5\alpha =$

a) $2\cos^2\left(\frac{5\alpha}{2}\right)$

b) $2\sin^2\left(\frac{5\alpha}{2}\right)$

c) $\frac{5}{2}\cos^2\left(\frac{3\alpha}{2}\right)$

d) $2\sin^2 2\alpha$

e) $2\cos^2 3\alpha$

84. $1+\cos 5\alpha =$

a) $2\cos^2\left(\frac{5\alpha}{2}\right)$

b) $2\sin^2\left(\frac{5\alpha}{2}\right)$

c) $\frac{5}{2}\cos^2\left(\frac{3\alpha}{2}\right)$

d) $2\sin^2 2\alpha$

e) $2\cos^2 3\alpha$

85. $1+\cos 3\alpha =$

a) $2\cos^2\left(\frac{3\alpha}{2}\right)$

b) $\sin^2\left(\frac{3\alpha}{2}\right)$

c) $\frac{3}{2}\cos^2\left(\frac{3\alpha}{2}\right)$

d) $2\sin^2 2\alpha$

e) $2\cos^2 3\alpha$

86. $\tan 2\alpha =$

a) $\frac{2\tan^2\alpha}{1-\tan\alpha}$

b) $\frac{2\tan\alpha}{1-\tan^2\alpha}$

c) $\frac{2\tan\alpha}{1-\tan^2\alpha}$

d) $\frac{2\cot\alpha}{1+\cot^2\alpha}$

e) $\frac{2\cot\alpha}{1-\cot^2\alpha}$

87. $\tan 4\alpha =$

a) $\frac{4\tan^2\alpha}{1-\tan\alpha}$

b) $\frac{2\tan 2\alpha}{1+\tan^2 2\alpha}$

c) $\frac{2\tan 2\alpha}{1-\tan^2 2\alpha}$

d) $\frac{4\tan 2\alpha}{1-\tan^2 2\alpha}$

e) $\frac{4\tan 2\alpha}{1+\tan^2 2\alpha}$

88. $\cos 3\alpha =$

a) $4\cos^3\alpha-3\cos\alpha$

b) $3\cos^3\alpha-4\cos\alpha$

c) $3\sin\alpha-4\sin^3\alpha$

d) $4\sin\alpha-3\sin^3\alpha$

e) $3\cos\alpha$

89. $\sin 3\alpha =$
a) $4\cos^3\alpha - \cos\alpha$
b) $3\cos^3\alpha - 4\cos\alpha$
c) $3\sin\alpha - 4\sin^3\alpha$
d) $4\sin\alpha - 3\sin^3\alpha$
e) $3\cos\alpha$

90. $\tan 3\alpha =$
a) $\dfrac{3\tan\alpha - \tan^3\alpha}{1-3\tan^2\alpha}$
b) $\dfrac{3\tan\alpha + \tan^3\alpha}{1-3\tan^2\alpha}$
c) $\dfrac{3\tan\alpha - \tan^3\alpha}{1+3\tan^2\alpha}$
d) $\dfrac{3\cot\alpha - \cot^3\alpha}{1-3\cot^2\alpha}$
e) $3\tan\alpha$

91. $\sin 2\alpha =$
a) $\dfrac{1+\tan^2\alpha}{1-\tan^2\alpha}$
b) $\dfrac{2\tan\alpha}{1-\tan^2\alpha}$
c) $\dfrac{1+\tan^2\alpha}{1-\tan^2\alpha}$
d) $\dfrac{2\tan\alpha}{1+\tan^2\alpha}$
e) $2\sin\alpha$

92. $\cos 12\alpha$
a) $3\cos^3\alpha - 4\cos 4\alpha$
b) $4\cos^3 4\alpha - 3\cos 4\alpha$
c) $3\sin 4\alpha - 4\sin^3 4\alpha$
d) $4\sin 4\alpha - 3\sin^3 4\alpha$
e) $12\cos\alpha$

93. $\sin 9\alpha$
a) $4\cos^3\alpha - 3\cos\alpha$
b) $3\cos^3 3\alpha - 4\cos 3\alpha$
c) $3\sin 3\alpha - 4\sin^3 3\alpha$
d) $4\sin 3\alpha - 3\sin^3 3\alpha$
e) $9\cos\alpha$

94. $\cos 9\alpha$
a) $4\cos^3\alpha - 3\cos 3\alpha$
b) $3\cos^3 3\alpha - 4\cos 3\alpha$
c) $3\sin 3\alpha - 4\sin^3 3\alpha$
d) $4\sin 3\alpha - 3\sin^3 3\alpha$
e) $9\cos\alpha$

95. $2\cos\alpha\cos\beta =$
a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$
b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$
c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$
d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$
e) None of these

96. $\cos 2\alpha =$
a) $\dfrac{1+\tan^2\alpha}{1-\tan^2\alpha}$
b) $\dfrac{2\tan\alpha}{1-\tan^2\alpha}$
c) $\dfrac{1-\tan^2\alpha}{1+\tan^2\alpha}$
d) $\dfrac{2\tan\alpha}{1+\tan^2\alpha}$
e) $2\sin\alpha$

97. $\cos 2\alpha =$
a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$
b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$
c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$
d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$
e) None of these

98. $2\cos\alpha\ \sin\beta =$
a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$
b) $\cos(\alpha+\beta)-\cos(\alpha-\beta)$
c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$
d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$
e) None of these

99. $2\sin\alpha\ \sin\beta =$
a) $\cos(\alpha+\beta)+\cos(\alpha-\beta)$
b) $\cos(\alpha-\beta)-\cos(\alpha+\beta)$
c) $\sin(\alpha+\beta)+\sin(\alpha-\beta)$
d) $\sin(\alpha+\beta)-\sin(\alpha-\beta)$
e) None of these

100. $\cos\theta - \cos\phi =$
a) $-2\sin\dfrac{\theta+\phi}{2}\sin\dfrac{\theta-\phi}{2}$
b) $2\sin\dfrac{\theta+\phi}{2}\sin\dfrac{\theta-\phi}{2}$
c) $2\sin\dfrac{\theta+\phi}{2}\cos\dfrac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

101. $\sin\theta+\sin\phi=$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

102. $\sin\theta-\sin\phi=$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) None of these

103. $\cos\frac{\pi}{12}=$

a) $\frac{\sqrt{3}-1}{2\sqrt{2}}$

b) $\frac{\sqrt{3}+1}{2\sqrt{2}}$

c) $\frac{\sqrt{3}+1}{\sqrt{2}}$

d) $\frac{\sqrt{3}-1}{\sqrt{2}}$

e) 1

104. $\text{Cos}315^{o}=$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) $-\frac{3}{\sqrt{2}}$

e) 0

105. $\text{Cos}540^{o}=$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) $-\frac{3}{\sqrt{2}}$

e) – 1

106. $\text{Tan}\,(-135^{o})=$

a) $\frac{1}{\sqrt{2}}$

b) $-\frac{1}{\sqrt{2}}$

c) $\frac{3}{\sqrt{2}}$

d) 1

e) 0

107. $\sec(-300^{o})=$

a) 4

b) 3

c) 2

d) 1

e) 0

108. $\cot(-855^{o})=$

a) 2

b) 1

c) – 1

d) 0

e) – 2

109. $\sec(-960^{o})=$

a) 2

b) 1

c) – 1

d) 0

e) – 2

110. $\sin(-780^o) =$

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

111. $\cos 254^o =$

a) $-\cos 33^o$
b) $\text{Cos}5^o$
c) $\text{Cos}16^o$
d) $\text{Sin}16^o$
e) $-\sin 16^o$

112. $\cos(-435^o) =$

a) $\cos 15^o$
b) $-\cos 15^o$
c) $-\sin 15^o$
d) $\text{Sin}15^o$
e) $\text{Sin}25^o$

113. $\sin(\alpha+\beta).\cos(\alpha-\beta) =$

a) $\sin\alpha - \sin\beta$
b) $\sin\alpha + \sin\beta$
c) $\sin^2\alpha - \sin^2\beta$
d) $\sin^2\alpha - \sin^2\beta + 1$
e) 0

114. $\sin(\alpha+\beta).\sin(\alpha-\beta) =$

a) $\sin\alpha - \sin\beta$
b) $\sin\alpha + \sin\beta$
c) $\sin^2\alpha - \sin^2\beta$
d) $\cos^2\beta - \cos^2\alpha$
e) 0

115. $\sin(45^\circ + \alpha) =$

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

116. $\tan(180^o + \theta) =$

a) $\cot\theta$
b) $\tan\theta$
c) $\sin\theta$
d) $-\tan\theta$
e) $-\cos\theta$

117. $\cos(\alpha+\beta).\cos(\alpha-\beta) =$

a) $\cot 2\alpha$
b) $\cos^2\alpha - \cos^2\beta$
c) $\sin 2\alpha$
d) $\tan 2\alpha$
e) None of these

118. $\frac{\tan\alpha + \tan\beta}{\tan\alpha - \tan\beta}$

a) $\frac{\cos(\alpha+\beta)}{\cos(\alpha-\beta)}$
b) $\frac{\cos(\alpha-\beta)}{\cos(\alpha+\beta)}$
c) $\frac{\sin(\alpha-\beta)}{\sin(\alpha+\beta)}$
d) $\frac{\sin(\alpha+\beta)}{\sin(\alpha-\beta)}$
e) $-\tan\alpha$

119. $\cos^4\theta =$

a) $\frac{1}{8}[3 - 4\cos 2\theta + 2\cos 4\theta]$
b) $\frac{1}{8}[3 + 4\cos 2\theta + 2\cos 4\theta]$
c) $4\sin^3\theta\ \cos\theta$
d) $-4\text{cosn}^3\theta\ \sin\theta$
e) none of these

120. $\sqrt{\frac{1+\sin\alpha}{1-\sin\alpha}} =$

a) $\frac{\tan\frac{\alpha}{2}+\cos\frac{\alpha}{2}}{\tan\frac{\alpha}{2}-\cos\frac{\alpha}{2}}$

b) $\frac{\sin\frac{\alpha}{2}-\cos\frac{\alpha}{2}}{\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2}}$

c) $\frac{\sin\frac{\alpha}{2}+\cos\frac{\alpha}{2}}{\sin\frac{\alpha}{2}-\cos\frac{\alpha}{2}}$

d) $\frac{\tan\frac{\alpha}{2}-\cos\frac{\alpha}{2}}{\tan\frac{\alpha}{2}+\cos\frac{\alpha}{2}}$

e) $4\cos 4\alpha$

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

a) $\sin\theta$
b) $2\cot 2\theta$
c) $\cos\theta$
d) $-\sec\theta$
e) $\sec\theta$

122. $2\sin 3\theta \cos\theta =$

a) $\cot 4\theta + \cot 2\theta$
b) $\cos 4\theta + \cos 2\theta$
c) $\cos 4\theta - \cos 2\theta$
d) $\sin 4\theta - \sin 2\theta$
e) $\sin 4\theta + \sin 2\theta$

123. $\sin 5\theta + \sin 3\theta =$

a) $2\cos 2\theta \sin\theta$
b) $-2\cos 4\theta \sin\theta$
c) $-2\sin 4\theta \cos\theta$
d) $2\cos 4\theta \sin\theta$
e) $2\sin 4\theta \cos\theta$

124. $2\sin 12^o \sin 46^o =$

a) $\cos 34^o \cos 58^o$
b) $\sin 34^o + \sin 58^o$
c) $\sin 34^o - \sin 58^o$
d) $\cos 34^o + \cos 58^o$
e) $\cos 34^o - \cos 58^o$

125. $\frac{\cos x-\cos 3x}{\sin 3x-\sin x} =$

a) cot2x
b) tan2x
c) csc2x
d) sec2x
e) cos2x

126. $\csc(-\alpha) =$

a) $-\cos\alpha$
b) $-\sec\alpha$
c) $\sec\alpha$
d) $\csc\alpha$
e) $-\csc\alpha$

127. $\cot(\alpha - 90^o) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $-\cot\alpha$
d) $\cot\alpha$
e) $\cos\alpha$

128. $\csc\left(\frac{\pi}{2}-\alpha\right) =$

a) $-\csc\alpha$
b) $\csc\alpha$
c) $-\sec\alpha$
d) $\sec\alpha$
e) $\cot\alpha$

129. $\tan\left(\alpha+\frac{\pi}{2}\right) =$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\sec\alpha$

130. $\cot\left(\alpha+\frac{\pi}{2}\right)=$

a) $\tan\alpha$
b) $-\tan\alpha$
c) $\cot\alpha$
d) $-\cot\alpha$
e) $\sec\alpha$

131. $\cos\alpha$ =

a) $1-2\sin^2\frac{\alpha}{2}$

b) $2\cos^2\frac{\alpha}{2}+1$

c) $2\cos^2\alpha$ - 1
d) $2\cos^2\alpha$ + 1
e) $1-2\sin^2\alpha$

132. $1-\cos2\alpha$ =

a) $2\sin\alpha$
b) $2\cos\alpha$
c) $2\sec\alpha$
d) $2\sin^2\alpha$
e) $2\cos^2\alpha$

133. $1-\cos6\alpha$ =

a) $3\sin^2\alpha$
b) $2\sin^2 3\alpha$
c) $3\sin^2 3\alpha$
d) $2\sin^2 2\alpha$
e) $2\cos^2 3\alpha$

134. $\cos\theta+\cos\phi=$

a) $-2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

b) $2\sin\frac{\theta+\phi}{2}\sin\frac{\theta-\phi}{2}$

c) $2\sin\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

d) $2\cos\frac{\theta+\phi}{2}\cos\frac{\theta-\phi}{2}$

e) none of these

****

Written by NAUMAN IDREES
(nomi255@yahoo.com)
FSc (Session: 2007-09)
ICMS College System Hayatabad, Peshawar