



## **GENIUSCOACHING CENTER**

**(THE BEST FOR LEET)**

### **Mathematics Assignment Sheet**

#### **Topic Covered Trigonometry**

Q1. If  $\sin \theta = -3/5$  and  $\theta$  lies in the third quadrant, then the value of  $\cos(\theta/2)$  is

- (a)  $1/5$
- (b)  $-1/\sqrt{10}$
- (c)  $-1/5$
- (d)  $1/\sqrt{10}$

Q2. If  $\tan \theta = -4/3$ , then  $\sin \theta$  is

- (a)  $-4/5$  but not  $4/5$
- (b)  $-4/5$  or  $4/5$
- (c)  $4/5$  but not  $-4/5$
- (d) none of these

Q3. The  $\tan 240^\circ = \tan \theta$ , then the value of  $\theta$  in the first quadrant is

- (a)  $60^\circ$
- (b)  $30^\circ$
- (c)  $45^\circ$
- (d)  $15^\circ$

Q4. If the angle  $\theta$  is in the third quadrant and  $\tan \theta = 3$ , then the value of  $\sin \theta$  is

- (a)  $1/\sqrt{10}$
- (b)  $-1/\sqrt{10}$

- (c)  $-3/\sqrt{10}$
- (d)  $3/\sqrt{10}$

Q5. The value of  $\operatorname{cosec}(-750^\circ)$  is

- (a)  $-2$
- (b)  $2$
- (c)  $-3$
- (d) none of these

Q6. The value of  $\sin 18^\circ - \cos 18^\circ$  is

- (a)  $-1/2$
- (b)  $\sqrt{5}/4$
- (c) positive
- (d) negative

Q7. The value of  $\sin 30^\circ - \cos 30^\circ$  is

- (a) positive
- (b)  $1$
- (c)  $0$
- (d) negative

Q8. The value of  $\cos 10^\circ - \sin 10^\circ$  is

- (a) positive
- (b) negative
- (c)  $0$
- (d)  $1$

Q9. Which of the following statement is incorrect

- (a)  $\sin \theta = -1/5$
- (b)  $\cos \theta = 1$
- (c)  $\sec \theta = 1/2$
- (d)  $\tan \theta = 20$

Q10. Which of the following is correct?

- (a)  $\sin 1^\circ > \sin 1$
- (b)  $\sin 1^\circ < \sin 1$

- (c)  $\sin 1^\circ = \sin 1$   
(d)  $\sin 1^\circ = (\pi/180)\sin 1$

Q11. If  $\alpha$  and  $\beta$  are angles in the first quadrant, such that  $\tan \alpha = 1/7$  and  $\sin \beta = 1/\sqrt{10}$ , then

- (a)  $\alpha + 2\beta = 90^\circ$   
(b)  $\alpha + 2\beta = 30^\circ$   
(c)  $\alpha + 2\beta = 75^\circ$   
(d)  $\alpha + 2\beta = 45^\circ$

Q12. The value of  $\sin(45^\circ + \theta) - \cos(45^\circ - \theta)$  is

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

Q13. Which of the following is correct

- (a)  $\tan 1 > \tan 2$   
(b)  $\tan 1 = \tan 2$   
(c)  $\tan 1 < \tan 2$   
(d)  $\tan 1 = 1$

Q14. The value of  $\cos 1^\circ \cos 2^\circ \dots \cos 100^\circ$  is

- (a) 1  
(b) -1  
(c) 0  
(d) none of these

Q15.  $\cos 1^\circ \cos 2^\circ \dots \cos 179^\circ =$

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

Q16.  $\cos 24^\circ + \cos 5^\circ + \cos 175^\circ + \cos 204^\circ + \cos 300^\circ =$

- (a)  $\frac{1}{2}$   
(b)  $-1/2$   
(c)  $\sqrt{3}/2$   
(d) none of these

Q17.  $\tan 380^\circ \cot 20^\circ =$

- (a) 0  
(b)  $\tan 20^\circ$   
(c) 1  
(d)  $\cot 20^\circ$

Q18.  $\tan 1^\circ \tan 2^\circ \tan 3^\circ \dots \tan 89^\circ =$

- (a) 0  
(b) -1  
(c) 1  
(d)  $\infty$

Q19.  $\cot(\pi/4 + \theta) \cot(\pi/4 - \theta) =$

- (a) -1  
(b) 0  
(c) 1  
(d)  $\infty$

Q20.  $\sin^2 75^\circ - \sin^2 15^\circ =$

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

Q21.  $\tan 5^\circ \tan 25^\circ \tan 45^\circ \tan 65^\circ \tan 85^\circ =$

- (a) 1  
(b)  $\frac{1}{2}$   
(c)  $\frac{3}{4}$   
(d) none of these

Q22. If  $A+B+C = \pi$ , then the value of  $\tan A + \tan B + \tan C$  is given by

- (a) 1  
(b)  $\tan A \tan B \tan C$   
(c) -1  
(d)  $\cot A \cot B \cot C$

Q23. If  $\alpha + \beta = \pi/4$ , then the value of  $(1 + \tan \alpha)(1 + \tan \beta)$  is

- (a) 1
- (b) 2
- (c)  $\infty$
- (d) none of these

Q24. If  $\sin \theta + \cos \theta = 1$ , then value of  $\sin 2\theta$  is

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

Q25.

$$\tan \pi/20 \tan 3\pi/20 \tan 5\pi/20 \tan 7\pi/20 \tan 9\pi/20 =$$

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

Q26.

$$\sin^2(\pi/18) + \sin^2(\pi/9) + \sin^2(7\pi/18) + \sin^2(4\pi/9) =$$

- (a) 1
- (b) 2
- (c) 4
- (d) none of these

Q27.  $\tan \theta \sin(\pi/2 + \theta) \cos(\pi/2 - \theta) =$

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

Q28. If  $m \sin \theta = n \sin(\theta + 2\alpha)$  then  $\tan(\theta + \alpha) \cot \alpha =$

- (a)  $1 - n/1 + n$
- (b)  $m + n/m - n$
- (c)  $m - n/m + n$
- (d) none of these

Q29. If  $\cos(\theta + \phi) - m \cos(\theta - \phi)$ , then  $\tan \theta$

- (a)  $[(1+m)(1-m)] \tan \phi$

- (b)  $[(1-m)(1+m)] \tan \phi$
- (c)  $[(1-m)(1+m)] \cot \phi$
- (d)  $[(1+m)(1-m)] \cot \phi$

Q30.  $\log \sin 1^\circ \log \sin 2^\circ \dots \log \sin 179^\circ =$

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

Q31.  $\log \tan 1^\circ + \log \tan 2^\circ + \dots + \log \tan 89^\circ =$

- (a) 1
- (b) 0
- (c)  $\pi/4$
- (d) none of these

Q32.  $\sin(\pi/10) \sin(13\pi/10) =$

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

Q33. if  $\sin \theta + \operatorname{cosec} \theta = 2$ , then  $\sin^2 \theta + \operatorname{cosec}^2 \theta$  is equal to

- (a) 1
- (b) 4
- (c) 2
- (d) none of these

Q34. If  $f(x) = \cos^2 x + \sec^2 x$ , its value always is

- (a)  $f(x) < 1$
- (b)  $f(x) = 1$
- (c)  $2 > f(x) > 1$
- (d)  $f(x) \geq 2$

Q35. If  $A + B + C = 180^\circ$ , then  $\tan A + \tan B + \tan C / \tan A \tan B \tan C$

- (a)  $\tan A \tan B \tan C$
- (b) 0

- (c) 1  
(d) none of these

Q36. If  $x=r \cos \Theta \cos \phi$ ,  $y=r \cos \Theta \sin \phi$ ,  $z=r \sin \Theta$ , then  $x^2+y^2+z^2=$

- (a) 0  
(b) 1  
(c) r  
(d)  $r^2$

Q37. If  $x=a \cos^3 \Theta$ ,  $y=b \sin^3 \Theta$  then

- (a)  $(x/a)^{2/3}+(y/b)^{2/3}=1$   
(b)  $(x/b)^{2/3}+(y/a)^{2/3}=1$   
(c)  $(a/x)^{2/3}+(b/y)^{2/3}=1$   
(d)  $(b/x)^{2/3}+(a/y)^{2/3}=1$

Q38. The equation  $x=2a\Theta/(1+\Theta^2)$ ,  $y=a(1-\Theta^2)/(1+\Theta^2)$ , where  $a$  is a constant, is the parametric equation of the curve

- (a)  $x^2-y^2=a^2$   
(b)  $x^2+y^2=a^2$   
(c)  $x^2+4y^2=4a^2$   
(d)  $x=2y$

Q39. If  $a \cos \Theta + b \sin \Theta = m$  and  $a \sin \Theta - b \cos \Theta = n$ , then the value of  $(a^2+b^2)$  is

- (a)  $m+n$   
(b)  $mn$   
(c)  $m^2+n^2$   
(d)  $\sqrt{mn}$

Q40. If the angle  $a$  of a triangle ABC is given by the equation  $3 \cos A + 2 = 0$ , then  $\sin A$  and  $\tan A$  are the roots of the equation

- (a)  $6x^2+5x-5=0$   
(b)  $6x^2-5\sqrt{5}x+5=0$   
(c)  $6x^2-5x+5=0$   
(d)  $6x^2+5\sqrt{5}x-5=0$

Q41.  $1/\sin 10^\circ - \sqrt{3}/\cos 10^\circ =$

- (a) 2  
(b) 4  
(c) 3  
(d) none of these

Q42.  $\sqrt{3} \operatorname{cosec} 20^\circ - \sec 20^\circ =$

- (a) 2  
(b)  $2 \sin 20^\circ / \sin 40^\circ$   
(c) 4  
(d)  $4 \sin 20^\circ / \sin 40^\circ$

Q43. If  $\tan \Theta = 1/2$  and  $\tan \phi = 1/3$ , then the value of  $\Theta + \phi$  is

- (a)  $\pi/6$   
(b)  $\pi$   
(c) zero  
(d)  $\pi/4$

Q44.  $\tan 15^\circ =$

- (a)  $1/3$   
(b)  $\sqrt{3}-2$   
(c)  $2-\sqrt{3}$   
(d) none of these

Q45. The value of  $\tan(B-C) + \tan(C-A) + \tan(A-B)$  is

- (a) 0  
(b) 1  
(c)  $\tan A \tan B \tan C$   
(d)  $\tan(B-C) \tan(C-A) \tan(A-B)$

Q46. The value of  $(\cos 15^\circ + \sin 15^\circ)/(\cos 15^\circ - \sin 15^\circ) =$

- (a)  $\tan 15^\circ$   
(b)  $\tan 60^\circ$   
(c)  $\tan 30^\circ$   
(d)  $\tan 75^\circ$

Q47. The value of  $(\cos 11^\circ + \sin 11^\circ)/(\cos 11^\circ - \sin 11^\circ) =$

- (a)  $\tan 45^\circ$
- (b)  $\tan 56^\circ$
- (c)  $\tan 60^\circ$
- (d)  $\cot 11^\circ$

Q48. The value of

$$(1 - \tan^2 30^\circ) / (1 + \tan^2 30^\circ) =$$

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

Q49. If  $A + B + C = \pi$ , then

$$\begin{vmatrix} \sin(A+B+C) & \sin B & \cos C \\ -\sin B & 0 & \tan A \\ \cos(A+B) & -\tan A & 0 \end{vmatrix}$$

- (a) 0
- (b)  $\infty$
- (c)  $-\infty$
- (d) 2

Q50. If  $\tan \theta = a/b$ , then  $b \cos 2\theta + a \sin 2\theta =$

- (a) a
- (b) b
- (c)  $b/a$
- (d) none of these

Q51. If  $A + C = B$ , then  $\tan A \tan B \tan C =$

- (a)  $\tan A \tan B + \tan C$
- (b)  $\tan B - \tan C - \tan A$
- (c)  $\tan A + \tan C - \tan B$
- (d)  $-(\tan A \tan B + \tan C)$

Q52.  $\tan 3A - \tan 2A - \tan A =$

- (a)  $\tan 3A \tan 2A \tan A$
- (b)  $-\tan 3A \tan 2A \tan A$

- (c)  $\tan A \tan 2A - \tan 2A \tan A \tan 3A - \tan 3A \tan A$
- (d) none of these

Q53.  $\tan 5x - \tan 3x - \tan 2x =$

- (a)  $\tan 5x \tan 3x \tan 2x$
- (b)  $\cos 5x \cos 3x \cos 2x$
- (c)  $\sin 5x \sin 3x \sin 2x$
- (d)  $\tan 8x \tan 2x \tan x$

Q54.  $\cos 57^\circ + \sin 27^\circ =$

- (a)  $\cos 30^\circ$
- (b)  $\cos 3^\circ$
- (c)  $\sin 3^\circ$
- (d) none of these

Q55.  $\sin 75^\circ + \cos 75^\circ =$

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

Q56. If  $\tan A = 1/3$  and  $\tan B = 1/7$ , then the value of  $2A + B$  is

- (a)  $30^\circ$
- (b)  $60^\circ$
- (c)  $45^\circ$
- (d)  $135^\circ$

Q57. If  $\sin A = \sin B$  and  $\cos A = \cos B$ , then

- (a)  $\sin \frac{1}{2}(A - B) = 0$
- (b)  $\sin \frac{1}{2}(A + B) = 0$
- (c)  $\cos \frac{1}{2}(A - B) = 0$
- (d)  $\cos \frac{1}{2}(A + B) = 0$

Q58.  $\sin^2 24^\circ - \sin^2 6^\circ =$

- (a)  $1/8(\sqrt{5} + 1)$
- (b)  $1/8(\sqrt{5} - 1)$
- (c)  $1/16(\sqrt{5} - 1)$

(d) none of these

Q59. The number of solutions of the equation  $\sin^2 x = 1/4$  is

- (a) 2
- (b) 3
- (c) 4
- (d) none of these

Q60. If  $\sin^2 x - \cos x = 1/4$ , then the value of  $x$  between 0 and  $2\pi$  are

- (a)  $\pi/3, 5\pi/3$
- (b)  $\pi/3, -\pi/3$
- (c)  $2\pi/3, \pi/3$
- (d)  $2\pi/3, 5\pi/3$

Q61. The solution of the equation  $\cos^2 \theta + \sin \theta + 1 = 0$  lies in the interval

- (a)  $(-\pi/4, \pi/4)$
- (b)  $(\pi/4, 3\pi/4)$
- (c)  $(3\pi/4, 5\pi/4)$
- (d)  $(5\pi/4, 7\pi/4)$

Q62. The general value of  $\theta$  satisfying the equation  $2 \sin^2 \theta - 3 \sin \theta - 2 = 0$  is

- (a)  $n\pi + (-1)^n \pi/6$
- (b)  $n\pi + (-1)^n \pi/2$
- (c)  $n\pi + (-1)^n 5\pi/6$
- (d)  $n\pi + (-1)^n 7\pi/6$

Q63. If  $\cos \theta + \sqrt{3} \sin \theta = 2$  has

- (a)  $\pi/3$
- (b)  $2\pi/3$
- (c)  $4\pi/3$
- (d)  $5\pi/3$

Q64 The equation  $\cos x + \sin x = 2$  has

- (a) only one solution
- (b) two solution

(c) no solution

(d) infinite number of solution

Q65. The general value of  $\theta$  satisfying  $\tan^2 2\theta = 3$ , is

- (a)  $2n\pi \pm \pi/3$
- (b)  $n\pi \pm 2\pi/3$
- (c)  $n\pi/2 \pm \pi/6$
- (d) none of these

Q66. Maximum value of  $a \cos \theta + b \sin \theta$  is

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

Q67. Maximum value of  $\sin \theta + \cos \theta$  is

- (a)  $\sqrt{2}$
- (b)  $1/\sqrt{2}$
- (c) -1
- (d) none of these

Q68. Minimum value of  $3 \sin \theta + 4 \cos \theta$  is

- (a) 5
- (b) 1
- (c) 3
- (d) -5

Q69. Minimum value of  $\sin \theta + \cos \theta$  is

- (a) 0
- (b)  $-\sqrt{2}$
- (c)  $-1/\sqrt{2}$
- (d) -2

Q70. The minimum values of  $3 \sin x + 4 \cos x + 5$  is

- (a) 5
- (b) 9
- (c) 7

(d) 0

Q71. Maximum value of  $\sin 2x + \cos 2x$  is

- (a)  $\sqrt{2}$
- (b)  $-\sqrt{2}$
- (c)  $1/\sqrt{2}$
- (d) none of these

Q72. The least value of  $\sin 2x - \sqrt{3} \cos 2x$  is

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

Q73. The value of  $\cos x$  for  $\pi$  for

$\pi/2 \leq x \leq \pi$

- (a) increases
- (b) decreases
- (c) remains constant
- (d) none of these

Q74. The graph of  $\tan x$  is discontinuous at  $x =$

- (a) 0
- (b)  $\pi/2$
- (c)  $\pi$
- (d)  $2\pi$

Q75. The graph of  $\sec x$  is discontinuous at  $x =$

- (a) 0
- (b)  $\pi$
- (c)  $3\pi/2$
- (d)  $2\pi$

Q76. The period of  $\sin x \cos x$  is

- (a)  $\pi$
- (b)  $2\pi$
- (c)  $\pi/2$
- (d) none of these

Q77. The period of  $a \sin x + b \cos x$  is

- (a)  $\pi/2$
- (b)  $\pi$
- (c)  $2\pi$
- (d) none of these

Q78. The period of  $\sin x \cos x$  is

- (a)  $\pi$
- (b)  $2\pi$
- (c)  $\pi/2$
- (d) none of these

Q79. If the angles of a triangle are in the ratio 1:2:3, the corresponding sides are in the ratio

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

1.b	2.b	3.a	4.c	5.a	6.d	7.d	8.a	9.c	10.b	11.d	12.b
13.a	14.c	15.b	16.a	17.c	18.c	19.c	20.d	21.a	22.b	23.b	24.c
25.a	26.b	27.d	28.b	29.c	30.b	31.b	32.c	33.c	34.d	35.c	36.d
37.a	38.b	39.c	40.a	41.b	42.c	43.d	44.c	45.d	46.b	47.b	48.a
49.a	50.b	51.b	52.a	53.a	54.b	55.b	56.c	57.a	58.b	59.d	60.a
61.d	62.d	63.a	64.c	65.c	66.d	67.a	68.d	69.b	70.d	71.a	72.a
73.b	74.b	75.c	76.a	77.c	78.b	79.d					