



TOPIC WISE QUESTIONS



GENERAL SOLUTION OF STANDARD TRIGONOMETRICAL EQUATION

Q.1 The general solution of the equation $\tan^2 \theta + 2\sqrt{3} \tan \theta = 1$ is given by -

- (1) $\theta = \frac{\pi}{2}$ (2) $\left(n + \frac{1}{12}\right)\pi ; n \in \mathbb{I}$
 (3) $(6n + 1) \frac{\pi}{12}$ (4) $\frac{n\pi}{12}$

Q.2 The general solution of $\tan \left(\frac{2}{3}\theta\right) = \sqrt{3}$ is -

- (1) $\frac{3n\pi}{2} + \frac{\pi}{2} ; n \in \mathbb{I}$ (2) $\frac{n\pi}{2} \pm \frac{\pi}{2} ; n \in \mathbb{I}$
 (3) $n\pi \pm \frac{\pi}{2} ; n \in \mathbb{I}$ (4) None of these

Q.3 If $\tan \theta + \tan 2\theta + \tan \theta \tan 2\theta = 1$, then general value of θ is -

- (1) $n\pi ; n \in \mathbb{I}$ (2) $n\pi \pm \frac{\pi}{3} ; n \in \mathbb{I}$
 (3) $\frac{n\pi}{3} + \frac{\pi}{12} ; n \in \mathbb{I}$ (4) none of these

Q.4 If $\frac{\tan 2\theta + \tan \theta}{1 - \tan \theta \tan 2\theta} = 0$, then general value of θ is -

- (1) $n\pi ; n \in \mathbb{I}$ (2) $\frac{n\pi}{3} ; n \in \mathbb{I}$
 (3) $\frac{n\pi}{4} ; n \in \mathbb{I}$ (4) $\frac{n\pi}{6} ; n \in \mathbb{I}$

Q.5 Find the general value of θ , when $\sec \theta = \frac{2}{\sqrt{3}}$

- (1) $n\pi + \frac{\pi}{6}$ (2) $n\pi - \frac{\pi}{6}$
 (3) $2n\pi \pm \frac{\pi}{6}$ (4) $n\pi + (-1)^n \frac{\pi}{6}$

Q.6 If $0 < \theta < 2\pi$, then the intervals of values of θ for which $2\sin^2 \theta - 5\sin \theta + 2 > 0$ is

(1) $\left(0, \frac{\pi}{6}\right) \cup \left(\frac{5\pi}{6}, 2\pi\right)$ (2) $\left(\frac{\pi}{8}, \frac{5\pi}{6}\right)$

(3) $\left(0, \frac{\pi}{8}\right) \cup \left(\frac{\pi}{6}, \frac{5\pi}{6}\right)$ (4) $\left(\frac{41\pi}{48}, \pi\right)$

Q.7 Find the general value of θ , when $\cos \left(\frac{-\theta}{2}\right) = 0$

- (1) $(n + 1)\pi ; n \in \mathbb{I}$ (2) $n\pi ; n \in \mathbb{I}$
 (3) $(2n + 1)\pi ; n \in \mathbb{I}$ (4) $2n\pi ; n \in \mathbb{I}$

Q.8 The general value of θ satisfying the equation $2\sin^2 \theta - 3\sin \theta - 2 = 0$, is -

- (1) $n\pi + (-1)^n \frac{\pi}{6}$ (2) $n\pi + (-1)^n \frac{\pi}{2}$
 (3) $n\pi + (-1)^n \frac{5\pi}{6}$ (4) $n\pi + (-1)^n \frac{7\pi}{6}$

Q.9 If $\tan a\theta - \tan b\theta = 0$, then the values of θ form a series in -

- (1) A.P. (2) G.P.
 (3) H.P. (4) None of these

Q.10 Find the general solution of $2\sin x + \tan x = 0$

- (1) $n\pi, (3k \pm 1) \frac{2\pi}{3} ; k \in \mathbb{I}$
 (2) $2n\pi, (3k + 1) \frac{2\pi}{3} ; k \in \mathbb{I}$
 (3) $2n\pi, (3k \pm 1) \frac{2\pi}{3} ; k \in \mathbb{I}$
 (4) None of these

Q.11 The solution set of $(2 \cos x - 1)(3 + 2 \cos x) = 0$ in the interval $0 \leq x \leq 2\pi$ is -

- (1) $\left\{\frac{\pi}{3}\right\}$
 (2) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$
 (3) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}, \cos^{-1}\left(\frac{-3}{2}\right)\right\}$

(4) None of these

Q.12 Find the general solution of x when $3\cos^2 x - 10\cos x + 3 = 0$

(1) $2n\pi \pm \cos^{-1}\left(\frac{1}{4}\right), n \in \mathbb{I}$

(2) $2n\pi \pm \cos^{-1}\left(\frac{1}{5}\right), n \in \mathbb{I}$

(3) $2n\pi \pm \cos^{-1}\left(\frac{1}{3}\right), n \in \mathbb{I}$

(4) None of these

Q.13 If $\cos \theta + \cos 7\theta + \cos 3\theta + \cos 5\theta = 0$, then $\theta =$

(1) $\frac{n\pi}{4}; n \in \mathbb{I}$

(2) $\frac{n\pi}{2}; n \in \mathbb{I}$

(3) $\frac{n\pi}{8}; n \in \mathbb{I}; n \neq 8k$

(4) $\frac{n\pi}{3}; n \in \mathbb{I}$

Q.14 The value of θ satisfying $\sin 7\theta = \sin 4\theta - \sin \theta$ and $0 < \theta < \frac{\pi}{2}$ are -

(1) $\frac{\pi}{9}, \frac{\pi}{4}$

(2) $\frac{\pi}{3}, \frac{\pi}{9}$

(3) $\frac{\pi}{6}, \frac{\pi}{9}$

(4) $\frac{\pi}{3}, \frac{\pi}{4}$

Q.15 Find the general solution of x when $\tan^2 \theta - (1 + \sqrt{3}) \tan \theta + \sqrt{3} = 0$

(1) $n\pi + \frac{\pi}{2}$ & $n\pi + \frac{\pi}{4}, n \in \mathbb{I}$

(2) $n\pi + \frac{\pi}{6}$ & $n\pi + \frac{\pi}{4}, n \in \mathbb{I}$

(3) $(2n+1)\frac{\pi}{6}$ & $n\pi + \frac{\pi}{6}, n \in \mathbb{I}$

(4) $n\pi + \frac{\pi}{3}$ & $n\pi + \frac{\pi}{4}, n \in \mathbb{I}$

Q.16 The general solution of equation $\sin^2 \theta \sec \theta + \sqrt{3} \tan \theta = 0$ is-

(1) $\theta = n\pi + (-1)^{n+1} \frac{\pi}{3}$

(2) $\theta = n\pi$

(3) $\theta = n\pi + (-1)^{n+1} \frac{\pi}{6}$

(4) $\theta = \frac{n\pi}{2}$

Q.17 If $(1 + \tan \theta)(1 + \tan \phi) = 2$, then $\theta + \phi =$
 (1) 30° (2) 45° (3) 60° (4) 75°

Q.18 If $\frac{\sin 3\theta}{2\cos 2\theta + 1} = \frac{1}{2}$ then θ is

(1) $\theta = 2n\pi + \frac{\pi}{6}$

(2) $\theta = 2n\pi - \frac{\pi}{6}$

(3) $\theta = n\pi + (-1)^n \frac{\pi}{6}$

(4) $\theta = n\pi - \frac{\pi}{6}$

Q.19 If α is a root of $25 \cos^2 \theta + 5 \cos \theta - 12 = 0$, $\frac{\pi}{2} < \alpha < \pi$, then $\sin 2\alpha$ is equal to-

(1) $\frac{24}{25}$

(2) $-\frac{24}{25}$

(3) $\frac{13}{18}$

(4) $-\frac{13}{18}$

Q.20 The general solution of the equation $\cos x + \sec x = 2$ is given by-

(1) $2n\pi; n \in \mathbb{I}$

(2) $n\pi; n \in \mathbb{I}$

(3) $\frac{n\pi}{4}; n \in \mathbb{I}$

(4) $\frac{n\pi}{2}; n \in \mathbb{I}$

Q.21 The general solution of $\sin x + 3\sin 2x + \sin 3x = \cos x + 3\cos 2x + \cos 3x$ in the interval $0 \leq x \leq 2\pi$, then $x =$

(1) $\frac{\pi}{8}, \frac{5\pi}{8}, \frac{2\pi}{3}$

(2) $\frac{\pi}{8}, \frac{5\pi}{8}, \frac{9\pi}{8}, \frac{13\pi}{8}$

(3) $\frac{4\pi}{3}, \frac{9\pi}{3}, \frac{2\pi}{3}, \frac{13\pi}{8}$

(4) $\frac{\pi}{8}, \frac{5\pi}{8}, \frac{9\pi}{3}, \frac{4\pi}{3}$

Q.22 The solution set of the equation $4\sin \theta \cos \theta - 2\cos \theta - 2\sqrt{3} \sin \theta + \sqrt{3} = 0$ in the interval $(0, 2\pi)$ is-

(1) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}\right\}$

(2) $\left\{\frac{\pi}{3}, \frac{5\pi}{3}\right\}$

(3) $\left\{\frac{3\pi}{4}, \frac{7\pi}{4}, \frac{\pi}{3}, \frac{5\pi}{3}\right\}$

(4) $\left\{\frac{\pi}{6}, \frac{5\pi}{6}, \frac{11\pi}{6}\right\}$

Q.23 The general value of θ satisfying the equation $\sin^2 \theta - 2\cos \theta + \frac{1}{4} = 0$

(1) $2n\pi \pm \frac{\pi}{3}$

(2) $2n\pi \pm \frac{\pi}{4}$

(3) $2n\pi \pm \frac{\pi}{6}$

(4) None of these

Q.24 If $\tan \theta + \tan 4\theta + \tan 7\theta = \tan \theta \tan 4\theta \tan 7\theta$, then $\theta =$

(1) $\frac{n\pi}{4}$

(2) $\frac{n\pi}{7}$

(3) $\frac{n\pi}{12}; n \neq 6(2k+1)$

(4) $n\pi$

Q.25 The general solution of equation $\sin x + \sin 5x = \sin 2x + \sin 4x$ is :

(1) $\frac{n\pi}{2}; n \in \mathbb{I}$

(2) $\frac{n\pi}{5}; n \in \mathbb{I}$

(3) $\frac{n\pi}{3}; n \in I$ (4) $\frac{2n\pi}{3}; n \in I$

Q.26 The solution of equation $13 - 4 \cos^2 x = 12 \sin x$ is -

- (1) $n\pi + (-1)^n \sin^{-1}\left(\frac{3}{2}\right)$
 (2) $n\pi + (-1)^n \sin^{-1}\left(-\frac{3}{2}\right)$
 (3) $n\pi$
 (4) No solution

Q.27 The general solution of the equation $\tan 2\theta \cdot \tan \theta = 1$ for $n \in I$ is

- (1) $\theta = (2n+1)\frac{\pi}{4}$ (2) $\theta = (2n+1)\frac{\pi}{6}$
 (3) $\theta = (2n+1)\frac{\pi}{2}$ (4) $\theta = (2n+1)\frac{\pi}{3}$

Q.28 The value of θ satisfying $3\cos^2 \theta - 2\sqrt{3} \sin \theta \cos \theta - 3 \sin^2 \theta = 0$ are-

- (1) $n\pi - \frac{2\pi}{3}, n\pi + \frac{\pi}{6}$ (2) $n\pi - \frac{\pi}{3}, n\pi + \frac{\pi}{6}$
 (3) $2n\pi - \frac{\pi}{3}, n\pi$ (4) $2n\pi + \frac{\pi}{3}, n\pi$

Q.29 $\sin x, \sin 2x, \sin 3x$ are in A.P if $x =$

- (1) $n\pi, n \in I$ (2) $\frac{n\pi}{3}, \frac{n\pi}{4}, n \in I$
 (3) $(2n+1)\pi, n \in I$ (4) $\frac{n\pi}{2}, 2n\pi, n \in I$

Q.30 General solution of $\tan 5\theta = \cot 2\theta$ is-

- (1) $\theta = \frac{n\pi}{7} + \frac{\pi}{14}$ (2) $\theta = \frac{n\pi}{7} + \frac{\pi}{5}$
 (3) $\theta = \frac{n\pi}{7} + \frac{\pi}{2}$ (4) None of these

GENERAL SOLUTION OF SQUARE OF TRIGONOMETRIC EQUATION

Q.31 Find the general solution of x when $\cos^2 \theta = \frac{1}{2}$

- (1) $n\pi \pm \frac{\pi}{4}, n \in I$ (2) $n\pi \pm \frac{\pi}{6}, n \in I$
 (3) $n\pi \pm \frac{\pi}{3}, n \in I$ (4) None of these

Q.32 If $2 \tan^2 \theta = \sec^2 \theta$, then the general value of θ is

- (1) $n\pi + \frac{\pi}{4}; n \in I$ (2) $n\pi - \frac{\pi}{4}; n \in I$

(3) $n\pi \pm \frac{\pi}{4}; n \in I$ (4) $2n\pi \pm \frac{\pi}{4}; n \in I$

Q.33 Find the general solution of x when $4 \tan^2 \theta = 3 \sec^2 \theta$

- (1) $n\pi \pm \frac{\pi}{4}, n \in I$ (2) $n\pi \pm \frac{\pi}{6}, n \in I$
 (3) $n\pi \pm \frac{\pi}{3}, n \in I$ (4) None of these

Q.34 If $3(\sec^2 \theta + \tan^2 \theta) = 5$, then the general value of θ is -

- (1) $2n\pi + \frac{\pi}{6}$ (2) $2n\pi \pm \frac{\pi}{6}$
 (3) $n\pi \pm \frac{\pi}{6}$ (4) $n\pi \pm \frac{\pi}{3}$

Q.35 General solution of $2 \sin^2 x + \sin^2 2x = 2$ is

- (1) $(2n+1)\frac{\pi}{4}, n \in I$
 (2) $n\pi \pm \frac{\pi}{4}, n \in I$
 (3) $n\pi \pm \frac{\pi}{2}, n \in I$
 (4) $n\pi \pm \frac{\pi}{4} \cup n\pi \pm \frac{\pi}{2}, n \in I$

Q.36 If $2 \cot^2 \theta = \operatorname{cosec}^2 \theta$, then the general value of θ is-

- (1) $n\pi \pm \frac{\pi}{4}$ (2) $2n\pi \pm \frac{\pi}{4}$
 (3) $n\pi + (-1)^n \frac{\pi}{4}$ (4) $2n\pi \pm \frac{\pi}{2}$

Q.37 The general solutions of the equation $\sec^2 x = \sqrt{2}(1 - \tan^2 x)$ are given by-

- (1) $n\pi + \frac{\pi}{8}$ (2) $n\pi \pm \frac{\pi}{4}$
 (3) $n\pi \pm \frac{\pi}{8}$ (4) None of these

Q.38 The solution of $4 \sin^2 x + \tan^2 x + \operatorname{cosec}^2 x + \cot^2 x - 6 = 0$ is -

- (1) $n\pi \pm \frac{\pi}{4}$ (2) $2n\pi \pm \frac{\pi}{4}$
 (3) $n\pi + \frac{\pi}{4}$ (4) $n\pi - \frac{\pi}{4}$

GENERAL SOLUTION OF TRIGONOMETRIC EQUATION A COS θ + B SIN θ = C

Q.39 If $\sqrt{3} \cos \theta + \sin \theta = \sqrt{2}$ then general solution of θ is -

- (1) $n\pi + (-1)^n \frac{\pi}{4}$ (2) $(-1)^n \frac{\pi}{4} - \frac{\pi}{3}$
 (3) $n\pi + \frac{\pi}{4} - \frac{\pi}{3}$ (4) $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{3}$

Q.40 The equation $a \sin x + b \cos x = c$, where $|c| > \sqrt{a^2 + b^2}$ has -

- (1) A unique solution
 (2) Infinite no. of solutions
 (3) No solution
 (4) None of these

Q.41 General value of x satisfying the equation $\sqrt{3} \sin x + \cos x = \sqrt{3}$ is given by-

- (1) $n\pi \pm \frac{\pi}{6}$ (2) $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{3}$
 (3) $n\pi \pm \frac{\pi}{3}$ (4) $n\pi + (-1)^n \frac{\pi}{3} - \frac{\pi}{6}$

Q.42 General solution of $\sin^3 x + \cos^3 x + \frac{3}{2} \sin 2x = 1$

- (1) $x = n\pi$ when n is even integer
 (2) $x = n\pi + \frac{\pi}{2}$ when n is odd integer
 (3) $x = 2n\pi$ when n is odd integer
 (4) $x = n\pi - \frac{\pi}{2}$ when n is even integer

Q.43 The general solution of the equation $(\sqrt{3} - 1) \sin \theta + (\sqrt{3} + 1) \cos \theta = 2$ is -

- (1) $2n\pi \pm \frac{\pi}{4} + \frac{\pi}{12}$ (2) $n\pi + (-1)^n \frac{\pi}{4} + \frac{\pi}{12}$
 (3) $2n\pi \pm \frac{\pi}{4} - \frac{\pi}{12}$ (4) $n\pi + (-1)^n \frac{\pi}{4} - \frac{\pi}{12}$

MOST GENERAL VALUE

Q.44 The most general value of θ which satisfies both the equations $\tan \theta = \sqrt{3}$ and $\operatorname{cosec} \theta = -\frac{2}{\sqrt{3}}$ is

- (1) $n\pi + \frac{4\pi}{3}; n \in \mathbb{I}$ (2) $n\pi + \frac{2\pi}{3}; n \in \mathbb{I}$
 (3) $2n\pi + \frac{4\pi}{3}; n \in \mathbb{I}$ (4) $2n\pi + \frac{2\pi}{3}; n \in \mathbb{I}$

Q.45 The general value of θ which satisfies the equations $\sin \theta = -\frac{1}{2}$ and $\tan \theta = \frac{1}{\sqrt{3}}$ is -

- (1) $n\pi + (-1)^n \frac{\pi}{6}$ (2) $n\pi + \frac{\pi}{6}$
 (3) $2n\pi \pm \frac{\pi}{6}$ (4) None of these

TRIGONOMETRIC INEQUALITIES

Q.46 General solution of the inequation $(\sin x - 2)(2 \sin x - 1) < 0$

- (1) $x \in \bigcup_{n \in \mathbb{I}} \left(\frac{\pi}{3} + 2n\pi, \frac{5\pi}{3} + 2n\pi \right)$
 (2) $x \in \bigcup_{n \in \mathbb{I}} \left(\frac{\pi}{3} + 2n\pi, \frac{2\pi}{3} + 2n\pi \right)$
 (3) $x \in \bigcup_{n \in \mathbb{I}} \left(\frac{\pi}{6} + 2n\pi, \frac{5\pi}{6} + 2n\pi \right)$
 (4) $x \in \bigcup_{n \in \mathbb{I}} \left(\frac{\pi}{6} + 2n\pi, \frac{3\pi}{5} + 2n\pi \right)$

Q.47 General solution of the inequation $\sin x + \sqrt{3} \cos x \geq 1$

- (1) $x \in \bigcup_{n \in \mathbb{I}} \left[2n\pi - \frac{\pi}{6}, 2n\pi + \frac{\pi}{2} \right]$
 (2) $x \in \bigcup_{n \in \mathbb{I}} \left[2n\pi - \frac{\pi}{3}, 2n\pi + \frac{\pi}{2} \right]$
 (3) $x \in \bigcup_{n \in \mathbb{I}} \left[2n\pi - \frac{\pi}{4}, 2n\pi + \frac{\pi}{2} \right]$
 (4) $x \in \bigcup_{n \in \mathbb{I}} \left[2n\pi, 2n\pi + \frac{\pi}{2} \right]$

Q.48 The complete solution of inequality $\sec^2 3x < 2$ is

- (1) $x \in \left(\frac{n\pi}{3} - \frac{\pi}{12}, \frac{n\pi}{3} + \frac{\pi}{12} \right), n \in \mathbb{I}$
 (2) $x \in \left(\frac{n\pi}{3} - \frac{\pi}{12}, \frac{n\pi}{3} + \frac{\pi}{6} \right), n \in \mathbb{I}$
 (3) $x \in \left(n\pi - \frac{\pi}{12}, n\pi + \frac{\pi}{12} \right), n \in \mathbb{I}$
 (4) $x \in \left(\frac{n\pi}{3} - \frac{\pi}{6}, \frac{n\pi}{3} + \frac{\pi}{6} \right), n \in \mathbb{I}$

Q.49 The complete solution of inequality $2 \cos^2 x - 7 \cos x + 3 < 0$ is

- (1) $n\pi - \frac{\pi}{3} < x < \frac{\pi}{3} + n\pi$
 (2) $2n\pi - \frac{\pi}{6} < x < \frac{\pi}{6} + 2n\pi$
 (3) $2n\pi - \frac{\pi}{3} < x < \frac{\pi}{3} + 2n\pi$

$$(4) n\pi - \frac{\pi}{6} < x < \frac{\pi}{6} + n\pi$$

Q.50 The set of solution satisfying inequality

$$|\sin x| < \frac{1}{2} \text{ is-}$$

$$(1) \left(n\pi, n\pi + \frac{\pi}{6} \right) (n \in \mathbb{I})$$

$$(2) \left(2n\pi, 2n\pi + \frac{\pi}{6} \right)$$

$$(3) \left(n\pi + \frac{\pi}{6}, n\pi + \frac{5\pi}{6} \right)$$

(4) None of these

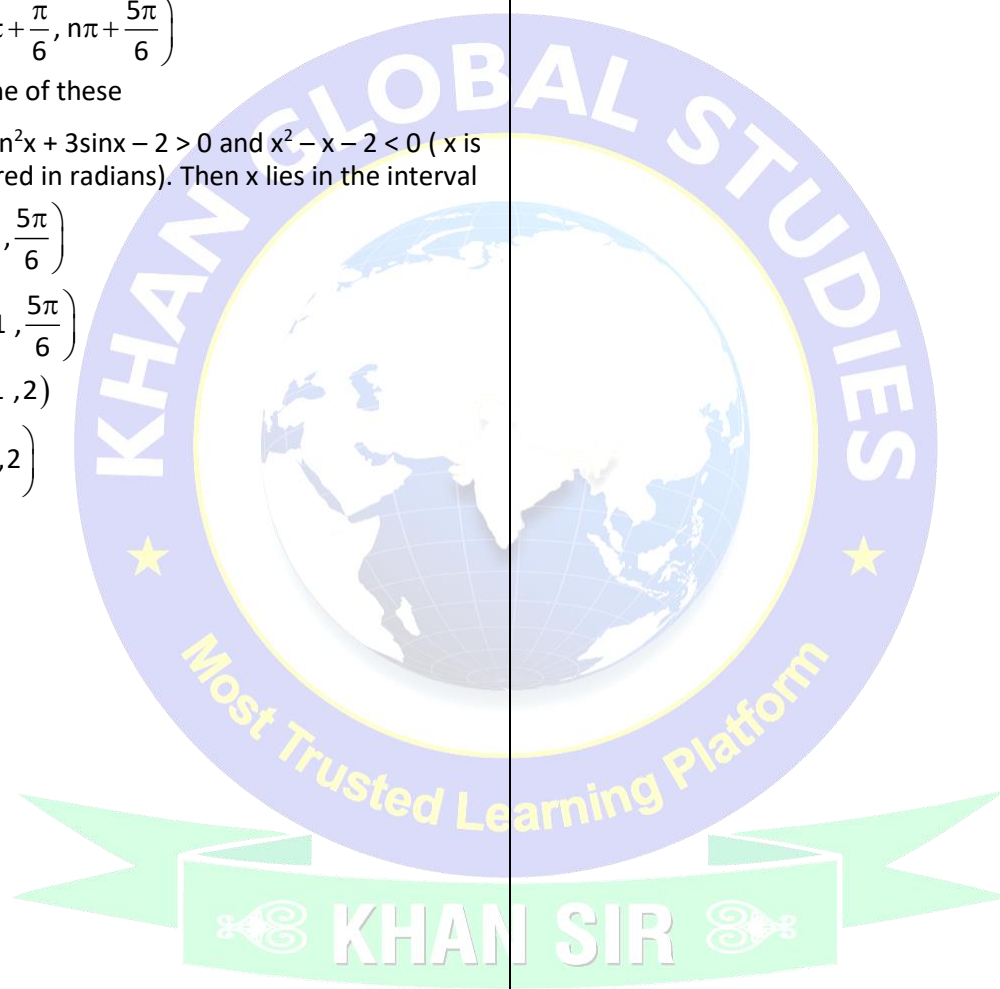
Q.51 Let $2 \sin^2 x + 3 \sin x - 2 > 0$ and $x^2 - x - 2 < 0$ (x is measured in radians). Then x lies in the interval

$$(1) \left(\frac{\pi}{6}, \frac{5\pi}{6} \right)$$

$$(2) \left(-1, \frac{5\pi}{6} \right)$$

$$(3) (-1, 2)$$

$$(4) \left(\frac{\pi}{6}, 2 \right)$$



ANSWER KEY

TOPIC WISE QUESTIONS

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	1	3	2	3	1	3	4	1	1	2	3	3	1	4
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	2	2	3	2	1	2	4	1	3	3	4	2	2	4	1
Que.	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Ans.	3	3	3	3	4	1	3	1	4	3	4	1	1	3	4
Que.	46	47	48	49	50	51									
Ans.	3	1	1	3	4	4									

