Solutions of Trigonometric Equations

1. The solution set of sin2x=cos3x is

    a) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{\pi}{10}+2n\pi\right\}\cup\left\{\dfrac{9\pi}{10}+2n\pi\right\}\cup\left\{\dfrac{13\pi}{10}+2n\pi\right\}\cup\left\{\dfrac{17\pi}{10}+2n\pi\right\},n\in \mathbb{Z}$

    b) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+n\pi\right\},n\in \mathbb{Z}$

    c) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in \mathbb{Z}$

    d) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in \mathbb{Z}$

    e) None of these

2. The solution set of $2\cos^2x=3\sin x$ is

    a) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in \mathbb{Z}$

    b) $\left\{\dfrac{\pi}{3}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+2n\pi\right\},n\in \mathbb{Z}$

    c) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in \mathbb{Z}$

    d) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in \mathbb{Z}$

    e) None of these

3. The solution set of $\sin2x + \cos2x = \sqrt{2}$ is

    a) $\left\{\dfrac{\pi}{2}+n\dfrac{\pi}{8}\right\},n\in \mathbb{Z}$

    b) $\left\{\dfrac{\pi}{8}+n\dfrac{\pi}{2}\right\},n\in \mathbb{Z}$

    c) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in \mathbb{Z}$

    d) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in \mathbb{Z}$

    e) None of these

4. The solution set of $\sin^2x+2\sin x=2-\cos^2x$ is

    a) $\left\{\dfrac{\pi}{3}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+2n\pi\right\},n\in \mathbb{Z}$

    b) $\left\{\dfrac{\pi}{3}+n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+2n\pi\right\},n\in \mathbb{Z}$

c) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in Z$

d) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in Z$

e)   None of these

5.   The solution set of $\sin x + \cos x = \sqrt{2}$ is

     a) $\left\{\dfrac{\pi}{4}+n\pi\right\},n\in Z$

     b) $\left\{\dfrac{\pi}{4}+2n\pi\right\},n\in Z$

     c) $\left\{\dfrac{\pi}{3}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+2n\pi\right\},n\in Z$

     d) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in Z$

     e)   None of these

6.   The solution set of $\sin x = \dfrac{1}{2}$ is

     a) $\left\{\dfrac{\pi}{3}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+2n\pi\right\},n\in Z$

     b) $\left\{\dfrac{\pi}{3}+n\pi\right\}\cup\left\{\dfrac{5\pi}{3}+n\pi\right\},n\in Z$

     c) $\left\{\dfrac{\pi}{6}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+2n\pi\right\},n\in Z$

     d) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\},n\in Z$

     e)   None of these

7.   The solution set of $\sin 2x = 1 + \cos 2x$ is

     a) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{\pi}{10}+2n\pi\right\}$

     b) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+2n\pi\right\},n\in Z$

     c) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+n\pi\right\},n\in Z$

     d) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{\pi}{4}+n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+n\pi\right\},n\in Z$

     e)   None of these

8.   The solution set of $\sin 4x = 1 + \cos 4x$ is

     a) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{\pi}{10}+2n\pi\right\}$

     b) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+2n\pi\right\},n\in Z$

c) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+n\pi\right\},n\in Z$

d) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{\pi}{4}+n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+n\pi\right\},n\in Z$

e) None of these

9. The solution set of sin4x = 1 + cos4x is

a) $\left\{\dfrac{\pi}{6}+n\pi\right\}\cup\left\{\dfrac{7\pi}{6}+n\pi\right\}\cup\left\{\dfrac{5\pi}{6}+n\pi\right\}\cup\left\{\dfrac{11\pi}{6}+n\pi\right\},n\in Z$

b) $\left\{\dfrac{\pi}{2}+2n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+2n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+2n\pi\right\},n\in Z$

c) $\left\{\dfrac{\pi}{2}+n\pi\right\}\cup\left\{\dfrac{3\pi}{2}+n\pi\right\}\cup\left\{\dfrac{\pi}{4}+n\pi\right\}\cup\left\{\dfrac{5\pi}{4}+n\pi\right\},n\in Z$

d) $\left\{\dfrac{\pi}{4}+n\pi\right\}\cup\left\{\dfrac{3\pi}{4}+n\pi\right\}\cup\left\{\dfrac{\pi}{8}+n\dfrac{\pi}{2}\right\}\cup\left\{\dfrac{5\pi}{8}+n\dfrac{\pi}{2}\right\},n\in Z$

e) None of these