Тригонометричні рівняння

1) $4\cos^2 x + 4\sin x = 1$

а) $(-1)^k \cdot \frac{\pi}{6} + \pi k,\ k \in \mathbf{Z}$; **б)** $(-1)^{k+1} \cdot \frac{\pi}{6} + \pi k,\ k \in \mathbf{Z}$; **в)** $(-1)^{k+1} \cdot \frac{\pi}{6} + \pi k,\ k \in \mathbf{Z}$.

2) $\cos 2x - \sin x = -2$

а) $x = \frac{\pi}{2} + 2\pi n,\ n \in \mathbf{Z}$; **б)** $x = (-1)^n \frac{\pi}{2} + \pi n,\ n \in \mathbf{Z}$; **в)** $x = \pm \frac{\pi}{2} + 2\pi n,\ n \in \mathbf{Z}$.

3) $\sqrt{3}\sin^2 2x - 2\sin 4x + \sqrt{3}\cos^2 2x = 0$

а) $x = (-1)^n \frac{\pi}{12} + \frac{\pi}{4} n,\ n \in \mathbf{Z}$; **б)** $x = \pm\frac{\pi}{12} + \frac{\pi}{2} n,\ n \in \mathbf{Z}$; **в)** $x = \frac{\pi}{6} + \frac{\pi}{2} n,\ n \in \mathbf{Z}$.

4) $\sin^2 x - 0{,}5\sin 2x = 0$

а) $x = (-1)^n \frac{\pi}{4} + \pi n,\ n \in \mathbf{Z}$ або $x = \pm \pi k,\ k \in \mathbf{Z}$; **б)** $x = \frac{\pi}{4} + \pi n,\ n \in \mathbf{Z}$ або $x = \pm \pi k,\ k \in \mathbf{Z}$;

в) $x = \frac{\pi}{4} + \pi n,\ n \in \mathbf{Z}$ або $x = \pi k,\ k \in \mathbf{Z}$.

5) $\sin 3x - \cos 3x = 1$

а) $\begin{cases} x = (-1)^n \frac{\pi}{3} + \frac{\pi}{3} n, n \in \mathbf{Z} \\ x = (-1)^n \frac{\pi}{6} + \frac{\pi}{3} k, k \in \mathbf{Z} \end{cases}$; **б)** $\begin{cases} x = \frac{\pi}{3} + \frac{2\pi}{3} n, n \in \mathbf{Z} \\ x = \frac{\pi}{6} + \frac{2\pi}{3} k, k \in \mathbf{Z} \end{cases}$; **в)** $\begin{cases} x = \frac{\pi}{6} + \frac{2\pi}{3} n, n \in \mathbf{Z} \\ x = \frac{\pi}{3} + \frac{2\pi}{6} k, k \in \mathbf{Z} \end{cases}$.

6) $2\sin\left(2x - \frac{\pi}{4}\right) - \sqrt{3} = 0$

а) $x = (-1)^n \frac{\pi}{3} + \pi n,\ n \in \mathbf{Z}$; **б)** $x = \pm \frac{\pi}{6} + \frac{\pi}{8} + \frac{\pi n}{2},\ n \in \mathbf{Z}$;

в) $x = (-1)^n \frac{\pi}{6} + \frac{\pi}{8} + \frac{\pi n}{2},\ n \in \mathbf{Z}$.

7) $\cos 3x + \sqrt{3}\sin 3x = -1$

а) $x = (-1)^{k+1} \frac{\pi}{18} - \frac{\pi}{18} + \frac{\pi k}{3},\ k \in \mathbf{Z}$; **б)** $x = (-1)^k \frac{\pi}{18} - \frac{\pi}{18} + \frac{\pi k}{3},\ k \in \mathbf{Z}$;

в) $x = \frac{\pi}{18} + \frac{\pi k}{3},\ k \in \mathbf{Z}$.

8) $\frac{\sin 2x}{1-\cos 2x}=0$

а) $x=\frac{\pi}{2}+\pi n,\ n\in \mathbf{Z}$; **б)** $x=\pm\frac{\pi}{2}+\frac{\pi n}{2},\ n\in \mathbf{Z}$; **в)** $x=\frac{\pi n}{2},\ n\in \mathbf{Z}$.

9) $\frac{\cos 3x-\cos x}{\sin 3x-\sin x}=0$

а) $x=(-1)^n\frac{\pi}{2}+2\pi n,\ n\in \mathbf{Z}$; **б)** $x=\frac{\pi}{2}+2\pi n,\ n\in \mathbf{Z}$; **в)** $x=\frac{\pi}{2}+\pi n,\ n\in \mathbf{Z}$.

10) $\frac{\sin 3x+\sin x}{\cos x}=2$

а) $x=\frac{\pi}{4}+\pi n,\ n\in \mathbf{Z}$; **б)** $x=\pm\frac{\pi}{4}+2\pi n,\ n\in \mathbf{Z}$; **в)** $x=(-1)^n\frac{\pi}{4}+\pi n,\ n\in \mathbf{Z}$.