

$$\operatorname{tg} x - \operatorname{tg} 2x = \sin x$$

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

$$[\sin x \cdot \cos 2x - \sin 2x \cdot \cos x] / \cos x \cdot \cos 2x = \sin x$$

$$\sin(x-2x) / \cos x \cdot \cos 2x = \sin x$$

$$\sin(-x) / \cos x \cdot \cos 2x - \sin x = 0$$

$$-\sin x / \cos x \cdot \cos 2x - \sin x = 0$$

$$-\sin x (1 / \cos x \cdot \cos 2x + 1) = 0$$

$$\sin x = 0$$

$$x = \pi k$$

$$1 / \cos x \cdot \cos 2x + 1 = 0$$

$$(1 + \cos x \cdot \cos 2x) / \cos x \cdot \cos 2x = 0$$

$$1 + \cos x \cdot \cos 2x = 0 \quad \cos x \cdot \cos 2x \neq 0$$

$$1 + \cos x (2 \cos^2 x - 1) = 0$$

$$z = \cos x$$

$$1 + z(2z^2 - 1) = 0$$

$$1 - 2z^3 + z = 0$$

$$2z^3 - z + 1 = 0$$

$$z = -1$$

$$2z^2 - 2z + 1 = 0$$

Кор нет

$$\cos x = -1$$

$$x = \pi + 2\pi k$$

Отв: πk

$$\begin{aligned} \cos x \cdot \cos 2x &\neq 0 \\ \cos x &\neq 0 \quad \cos 2x &\neq 0 \\ x &\neq \pi/2 + \pi k \quad 2x \neq \pi/2 + \pi k \\ & \quad x \neq \pi/4 + \pi k/2 \\ & \quad x \neq (\pi - 2\pi k)/4 \end{aligned}$$

2 способ

$$\cos x \cdot \cos 2x = -1$$

$$\cos x = -5 \quad \cos 2x = \frac{1}{5} \quad \text{НЕВОЗМОЖНО}$$

$$\cos x = 1$$

$$x = 2\pi k$$

$$\cos 2x = -1$$

$$2x = \pi + 2\pi k$$

$$x = \pi/2 + \pi k$$

$$\cos x = -1$$

$$x = \pi + 2\pi k$$

$$\cos 2x = 1$$

$$2x = 2\pi k$$

$$x = \pi k$$

Решение системы $x = \pi + 2\pi k$

3 способ

$$\cos x \cdot \cos 2x = -1$$

$$\cos(x+y) + \cos(x-y) = 2 \cos x \cdot \cos y$$

$$\frac{1}{2} \cos(x+2x) + \frac{1}{2} \cos(x-2x) = -1$$

$$\cos(3x) + \cos(-x) = -2$$

$$\cos 3x + \cos x = -2$$

$$\cos 3x = -1 \quad \text{и} \quad \cos x = -1$$

$$3x = \pi + 2\pi k \quad x = \pi + 2\pi k$$

$$x = \pi/3 + 2\pi k/3$$

Решение системы $x = \pi + 2\pi k$