

$$2\cos 13x + 3\cos 3x + 3\cos 5x - 8\cos x \cdot \cos^3 4x = 0$$

$$2\cos 13x + 3(\cos 3x + \cos 5x) - 8\cos x \cdot \cos^3 4x = 0$$

$$2\cos 13x + 3(2\cos 4x \cdot \cos x) - 8\cos x \cdot \cos^3 4x = 0$$

$$2\cos 13x + 6\cos 4x \cdot \cos x - 8\cos x \cdot \cos^3 4x = 0$$

$$2\cos 13x + \cos 4x(6\cos x - 8\cos x \cdot \cos^2 4x) = 0$$

$$\cos 13x + \cos 4x \cdot \cos x(3 - 4\cos^2 4x) = 0$$

$$\cos 13x + \cos x(3\cos 4x - 4\cos^3 4x) = 0$$

$$\cos 13x - \cos x \cdot \cos 12x = 0$$

$$\cos 13x - \frac{1}{2}(\cos 13x + \cos 11x) = 0$$

$$2\cos 13x - \cos 13x - \cos 11x = 0$$

$$\cos 13x - \cos 11x = 0$$

$$-2\sin 12x \cdot \sin x = 0$$

$$\sin 12x \cdot \sin x = 0$$

$$x = \pi k$$

$$x = \pi k / 12$$

ответ: $\pi k / 12$

$$\sin 2x \cdot \sin 6x \cdot \cos 4x + \frac{1}{4} \cos 12x = 0$$

$$\sin 2x \cdot \sin 6x = -\frac{1}{2}(\cos 8x - \cos 4x)$$

$$-\frac{1}{2}(\cos 8x - \cos 4x) \cdot \cos 4x + \frac{1}{4} \cos 12x = 0$$

$$-\frac{1}{2}(\cos 8x - \cos 4x) \cdot \cos 4x + \frac{1}{4} \cos(4x + 8x) = 0$$

$$\cos(4x + 8x) = \cos 4x \cdot \cos 8x - \sin 4x \cdot \sin 8x$$

$$-2\cos 8x \cdot \cos 4x + 2\cos 4x^2 + \cos 4x \cdot \cos 8x - \sin 4x \cdot \sin 8x = 0$$

$$\underline{-2\cos 8x \cdot \cos 4x + 2\cos 4x^2 + \cos 4x \cdot \cos 8x - \sin 4x \cdot 2 \cdot \cos 4x \cdot \sin 4x = 0}$$

поискать ошибку!!!

$$\cos 4x(-\cos 8x + 2\cos 4x - \sin 4x \cdot 2 \cdot \sin 4x) = 0$$

$$\cos 4x = 0$$

$$x = \pi/8 + \pi k/4$$

$$-\cos 8x + 2\cos 4x - 2\sin^2 4x = 0$$

$$-\cos^2 4x + \sin^2 4x + 2\cos 4x - 2\sin^2 4x = 0$$

$$-\cos^2 4x + 1 - \cos^2 4x + 2\cos 4x - 1 + \cos^2 4x = 0$$

$$\cos 4x = t$$

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

$$-t^2 + 2t = 0$$

$$-t(t-2) = 0$$

$$t = 0, 2$$

$$2 - \text{not}$$

$$\cos 4x = 0$$

(должно было быть $\cos 4x = \frac{1}{2}$)