

$$2\sqrt{3}\sin 5x - \sqrt{3}\sin x = \cos 24x \cdot \cos x + 2\cos 5x - 6$$

$$2\sqrt{3}\sin 5x - 2\cos 5x = \sqrt{3}\sin x + \cos 24x \cdot \cos x - 6$$

$$2(\sqrt{3}\sin 5x - \cos 5x) = \sqrt{3}\sin x + \cos 24x \cdot \cos x - 6$$

$$4(\sin 5x \cdot \sqrt{3}/2 - \cos 5x/2) = \sqrt{(3 + \cos^2 24x)} (\sin x \cdot \sqrt{3}/\sqrt{(3 + \cos^2 24x)} + \cos x \cdot \cos 24x/\sqrt{(3 + \cos^2 24x)}) - 6$$

$$4(\sin 5x \cdot \sqrt{3}/2 - \cos 5x/2) = \sqrt{(3 + \cos^2 24x)} (\sin x \cdot \sqrt{3}/\sqrt{(3 + \cos^2 24x)} + \cos x \cdot \cos 24x/\sqrt{(3 + \cos^2 24x)}) - 6$$

$$\sin t = 1/2$$

$$\cos t = \sqrt{3}/2$$

$$t = P/6$$

$$4(\sin 5x \cdot \cos P/6 - \sin P/6 \cdot \cos 5x) = \sqrt{(3 + \cos^2 24x)} (\sin x \cdot \cos k + \sin k \cdot \cos x) - 6$$

$$4\sin(5x - P/6) = \sqrt{(3 + \cos^2 24x)} \sin(x + k) - 6$$

$$-4 \leq 4\sin(5x - P/6) \leq 4$$

$$\sqrt{3} \leq \sqrt{(3 + \cos^2 24x)} \leq 2$$

$$\sqrt{(3 + \cos^2 24x)} \sin(x + k)$$

$$-2 \leq \sqrt{(3 + \cos^2 24x)} \sin(x + k) \leq 2$$

$$\sqrt{(3 + \cos^2 24x)} \sin(x + k) - 6$$

$$-8 \leq \sqrt{(3 + \cos^2 24x)} \sin(x + k) - 6 \leq -4$$

Левая и правая части достигают равенства только при -4

Приравняем левую часть к -4

$$4\sin(5x - P/6) = -4$$

$$\sin(5x - P/6) = -1$$

$$5x - P/6 = 3P/2 + 2Pn$$

$$5x = 5P/3 + 2Pn$$

$$x = P/3 + \frac{2}{5}Pn$$

Ответ: $P/3 + 2Pn$

$$\begin{aligned} x_1 &= P/3 + 2Pn \\ x_2 &= 11P/15 + 2Pn \\ x_3 &= 17P/15 + 2Pn \\ x_4 &= 23P/15 + 2Pn \\ x_5 &= 29P/15 + 2Pn \end{aligned}$$

Подставим в $\sqrt{3}\sin x + \cos 24x \cdot \cos x - 6$

x1: ПОДХОДИТ
 $\sqrt{3}\sin P/3 + \cos 2P \cdot \cos P/3 - 6 = \sqrt{3}\sqrt{3}/2 + 1/2 - 6 = \sqrt{3}^2/2 - 5.5 = 3/2 - 5.5 = -4$

x2: не подходит
 $\sqrt{3}\sin 11P/15 + \cos 88P/5 \cdot \cos 11P/15 - 6 = \sqrt{3}\sin 11P/15 + \cos(88P/5 - 80P/5) \cdot \cos 11P/15 - 6 =$
 $= \sqrt{3}\sin 11P/15 + \cos 8P/5 \cdot \cos 11P/15 - 6$
 $\sqrt{3}\sin 11P/15 + \cos 8P/5 \cdot \cos 11P/15 = 2$
 $\sqrt{(3 + \cos^2 8P/5)} \sin(11P/15 + u) = 2$
 Равенство возможно, если $\cos^2 8P/5 = 1$, а это не так

x3:
 $\sqrt{3}\sin 17P/15 + \cos 136P/5 \cdot \cos 17P/15 - 6 = \sqrt{3}\sin 17P/15 + \cos(136P/5 - 130P/5) \cdot \cos 17P/15 - 6 = \sqrt{3}$
 $\cdot \sin 17P/15 + \cos 6P/5 \cdot \cos 17P/15 - 6$
 $\sqrt{3}\sin 17P/15 + \cos 6P/5 \cdot \cos 17P/15 = 2$
 Также как и x2

x4:
 $\sqrt{3}\sin 23P/15 + \cos 184P/5 \cdot \cos 23P/15 - 6 = \sqrt{3}\sin 23P/15 + \cos(184P/5 - 180P/5) \cdot \cos$
 $23P/15 = \sqrt{3}\sin 23P/15 + \cos 4P/5 \cdot \cos 23P/15 - 6$
 $\sqrt{3}\sin 23P/15 + \cos 4P/5 \cdot \cos 23P/15 = 2$

x5:
 $\sqrt{3}\sin 29P/15 + \cos 232P/5 \cdot \cos 29P/15 - 6 = \sqrt{3}\sin 29P/15 + \cos(232P/5 - 230P/5) \cdot \cos$
 $29P/15 - 6 = \sqrt{3}\sin 29P/15 + \cos 2P/5 \cdot \cos 29P/15 - 6$
 $\sqrt{3}\sin 29P/15 + \cos 2P/5 \cdot \cos 29P/15 = 2$

