

$$\begin{aligned}
& (\sin x + \sin 3x + \sin 5x) / (\cos x + \cos 3x + \cos 5x) + 2 \operatorname{tg} x = 0 \\
& (2 \sin((x+5x)/2) \cos((x-5x)/2) + \sin 3x) / (\cos 3x + 2 \cos((x+5x)/2) \cos((x-5x)/2)) + 2 \operatorname{tg} x = 0 \\
& (2 \sin((6x)/2) \cos((-4x)/2) + \sin 3x) / (\cos 3x + 2 \cos((6x)/2) \cos((-4x)/2)) + 2 \operatorname{tg} x = 0 \\
& (2 \sin((6x)/2) \cos((-4x)/2) + \sin 3x) / (\cos 3x + 2 \cos((6x)/2) \cos((-4x)/2)) + 2 \sin x / \cos x = 0 \\
& (2 \sin(3x) \cos(-2x) + \sin 3x) / (\cos 3x + 2 \cos(3x) \cos(-2x)) + 2 \sin x / \cos x = 0 \\
& (\sin 3x (2 \cos(-2x) + 1)) / (\cos 3x (1 + 2 \cos(-2x))) + 2 \sin x / \cos x = 0 \\
& \sin 3x / \cos 3x + 2 \sin x / \cos x = 0 \\
& (\sin 3x \cdot \cos x + 2 \sin x \cdot \cos 3x) / (\cos 3x \cdot \cos x) = 0 \\
& \sin 3x \cdot \cos x + 2 \sin x \cdot \cos 3x = 0 \\
& \frac{1}{2} [\sin(3x+x) + \sin(3x-x)] + \sin(x+3x) + \sin(x-3x) = 0 \\
& \frac{1}{2} [\sin(4x) + \sin(2x)] + \sin(4x) + \sin(-2x) = 0 \\
& \frac{1}{2} \sin 4x + \frac{1}{2} \sin 2x + \sin(4x) - \sin(2x) = 0 \\
& \frac{3}{2} \sin 4x + \frac{1}{2} \sin 2x = 0 \\
& 3 \sin 4x + \sin 2x = 0 \\
& 6 \sin 2x \cdot \cos 2x + \sin 2x = 0 \\
& \sin 2x (6 \cos 2x + 1) = 0 \\
& \\
& \sin 2x = 0 \\
& 2x = \pi k \\
& x = \pi k / 2 \\
& \\
& 6 \cos 2x + 1 = 0 \\
& 6 \cos 2x = -1 \\
& \cos 2x = -\frac{1}{6} \\
& x = -\arccos(\frac{1}{6}) / 2 + \pi k \\
& x = \arccos(\frac{1}{6}) / 2 + \pi k \\
& \\
& \cos 3x \cdot \cos x \neq 0 \\
& \cos 3x \neq 0 \\
& 3x = \pi / 2 + \pi k \\
& x = \pi / 6 + \pi k / 3 \\
& \cos x \neq 0 \\
& x \neq \pi / 2 + \pi k
\end{aligned}$$

$$\begin{aligned}
& 2 \cos(-2x) + 1 \neq 0 \\
& 2 \cos(2x) \neq -1 \\
& \cos(2x) \neq -\frac{1}{2} \\
& 2x \neq 5\pi/6 + 2\pi k \\
& x \neq 5\pi/12 + \pi k \\
& x \neq 7\pi/12 + \pi k \\
& \text{Ответ: } -\arccos(\frac{1}{6})/2 + \pi k; \arccos(\frac{1}{6})/2 + \pi k; \\
& \pi k;
\end{aligned}$$

