

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

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

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

$$8(\sin x + \cos x) - 4(\sin^3 x + \cos^3 x) = 2\sqrt{2}(2 + 2\sin x \cos x)$$

$$4(2(\sin x + \cos x) - \sin^3 x - \cos^3 x) = 4\sqrt{2}(1 + \sin x \cos x)$$

$$2(\sin x + \cos x) - (\sin^3 x + \cos^3 x) = \sqrt{2}(1 + \sin x \cos x)$$

$$2(\sin x + \cos x) - (\sin x + \cos x)(\sin^2 x - \sin x \cos x + \cos^2 x) = \sqrt{2}(1 + \sin x \cos x)$$

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

$$(\sin x + \cos x)(1 + \sin x \cos x) - \sqrt{2}(1 + \sin x \cos x) = 0$$

$$(1 + \sin x \cos x)(\sin x + \cos x - \sqrt{2}) = 0$$

$$1) 1 + \sin x \cos x = 0$$

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

$$2) \sin x + \cos x = \sqrt{(1^2 + 1^2)}(\sin x/\sqrt{2} + \cos x/\sqrt{2}) = \sqrt{2}(\sin x/\sqrt{2} + \cos x/\sqrt{2}) = \sqrt{2}(\sin x \cdot 1/\sqrt{2} + \cos x \cdot 1/\sqrt{2})$$

$$\cos t = 1/\sqrt{2}$$

$$\sin t = 1/\sqrt{2}$$

$$t = \pi/4$$

$$\sqrt{2}(\sin x \cos \pi/4 + \cos x \sin \pi/4) = \sqrt{2} \sin(x + \pi/4)$$

$$\sqrt{2} \sin(x + \pi/4) - \sqrt{2} = 0$$

$$\sqrt{2}(\sin(x + \pi/4) - 1) = 0$$

$$\sin(x + \pi/4) - 1 = 0$$

$$\sin(x + \pi/4) = 1$$

$$x + \pi/4 = \pi/2 + 2\pi n$$

$$x = \pi/4 + 2\pi n$$

$$1) 1 + \sin x \cos x = 0$$

$$2 + 2\sin x \cos x = 0$$

$$2 + \sin 2x = 0$$

$$\sin 2x = -2$$

Нет Решений

Ответ:  $\pi/4 + 2\pi n$

$\sin \alpha \in [-1; 1]$

$$1 + \sin x \cos x = 0$$

$$\sin x \cos x = -1$$

1 случай

$$\sin x = 1$$

$$\cos x = -1$$

$$\sin x = -1$$

$$\cos x = 1$$