

$$4\sin x + 2\cos x = 2 + 3\operatorname{tg} x$$

$$4\sin x + 2\cos x = 2 + 3\sin x / \cos x$$

$$4\sin x + 2\cos x - 2 - 3\sin x / \cos x = 0$$

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

$$\cos x \neq 0$$

$$4\sin x \cdot \cos x + 2\cos^2 x - 2\cos x - 3\sin x = 0$$

$$4\sin x \cdot \cos x + 2 - 2\sin^2 x - 2\cos x - 3\sin x = 0$$

$$2\sin x(2\cos x - \sin x) + 2 - 2\cos x - 3\sin x = 0$$

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

$$2\sin x(2\cos x - \sin x) - 1(2\cos x - \sin x) - 4\sin x + 2 = 0$$

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

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

$$2\sin x - 1 = 0$$

$$2\sin x = 1$$

$$\sin x = \frac{1}{2}$$

$$x = \pi/6 + 2\pi k \text{ или } x = 5\pi/6 + 2\pi k$$

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

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

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

$$\sqrt{1+4}(1/\sqrt{5}\sin x - 2/\sqrt{5}\cos x) = -2$$

$$\cos P = 1/\sqrt{5}$$

$$\sin P = 2/\sqrt{5}$$

$$\sqrt{5}(\sin x \cdot \cos P - \sin P \cdot \cos x) = -2$$

$$\sqrt{5} \cdot \sin(x - P) = -2$$

$$P = \arcsin(2/\sqrt{5})$$

$$\sqrt{5} \cdot \sin(x - \arcsin(2/\sqrt{5})) = -2$$

$$\sin(x - \arcsin(2/\sqrt{5})) = -2/\sqrt{5}$$

$$(x - \arcsin(2/\sqrt{5})) = \arcsin(-2/\sqrt{5}) + 2\pi k$$

$$(x - \arcsin(2/\sqrt{5})) = \pi - \arcsin(-2/\sqrt{5}) + 2\pi k$$

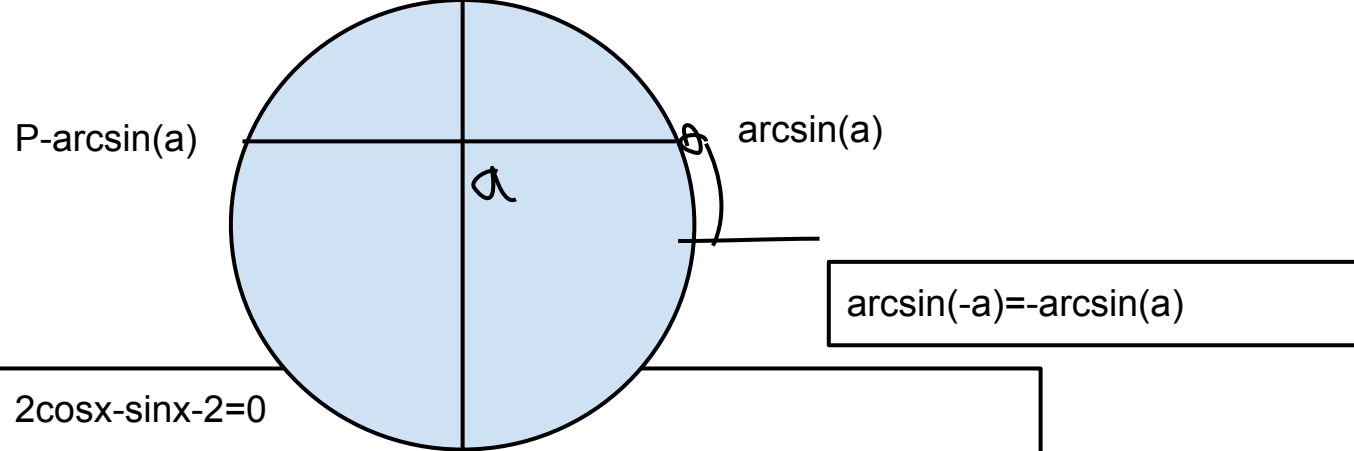
$$x = \arcsin(2/\sqrt{5}) + \arcsin(-2/\sqrt{5}) + 2\pi k$$

$$x = \arcsin(2/\sqrt{5}) + \pi - \arcsin(-2/\sqrt{5}) + 2\pi k$$

Ответ:  $x = \pi/6 + 2\pi k$  или  $x = 5\pi/6 + 2\pi k$

$$x = \arcsin(2/\sqrt{5}) + \arcsin(-2/\sqrt{5}) + 2\pi k = 2\pi k$$

$$x = \arcsin(2/\sqrt{5}) + \pi - \arcsin(-2/\sqrt{5}) + 2\pi k$$



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

$$a \cdot \sin x + b \cdot \cos x = d$$

$$a \cdot 2\sin(x/2) / 2\cos(x/2) + b \cdot (\cos^2(x/2) - \sin^2(x/2)) = d$$

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

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

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

$$a \cdot x^2 + b \cdot x + c = 0$$

однородное уравнение

если степени всех слагаемых равны, а все это вместе

равно нулю, то это однородное уравнение

решается либо делением на  $y^2$ , либо на  $x^2$

$$a \cdot x^2 + b \cdot x + c = 0 \quad | : y^2$$

$$a \cdot (x^2/y^2) + b \cdot x/y + c = 0$$

$$a \cdot (x/y)^2 + b \cdot (x/y) + c = 0$$

$$x/y = t$$

$$a \cdot (t)^2 + b \cdot t + c = 0$$

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

$$\sin(x/2) = 0$$

$$x/2 = \pi k$$

$$x = 2\pi k$$

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

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

$$2\operatorname{tg} x/2 = -1$$

$$\operatorname{tg} x/2 = -\frac{1}{2}$$

$$x/2 = \operatorname{arctg}(-\frac{1}{2}) + \pi k$$

$$x = 2\operatorname{arctg}(-\frac{1}{2}) + 2\pi k$$

Ответ:  $x = \pi/6 + 2\pi k$  или  $x = 5\pi/6 + 2\pi k$   $x = 2\pi k$   $x = 2\operatorname{arctg}(-\frac{1}{2}) + 2\pi k$