

$$\sin (kx + m) = a;$$

$$\cos (kx + m) = a;$$

$$\operatorname{tg} (kx + m) = a;$$

$$\operatorname{ctg} (kx + m) = a;$$

$\sin x = a$, при $|a| \leq 1$:

$$x = (-1)^n \arcsin a + \pi n;$$

$$x = \arcsin a + 2\pi k;$$

$$x = \pi - \arcsin a + 2\pi k;$$

$$\sin x = a, \quad \text{при } |a| \leq 1:$$

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$\sin x = a$, при $|a| \leq 1$:

$\sin x = a;$
 $\cos x = a;$ } **не имеют решений;**

$\operatorname{tg} x = a$ имеет решение $\forall a$

$$x = \operatorname{arctg} a + \pi n;$$

$\operatorname{ctg} x = a$ имеет решение $\forall a$

$$x = \operatorname{arccctg} x a + \pi n;$$

Частные случаи:

	$a = 0$	$a = -1$	$a = 1$
$\sin x = a$	$x = \pi n$	$x = -\frac{\pi}{2} + 2\pi n$	$x = \frac{\pi}{2} + 2\pi n$
$\cos x = a$	$x = \frac{\pi}{2} + \pi n$	$x = \pi + 2\pi n$	$x = 2\pi n$

$$\sin x = a, \quad \text{при } |a| \leq 1:$$

Решение.

$$\sin x = a, \quad \text{при } |a| \leq 1:$$

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$$\sin x = a, \quad \text{при } |a| \leq 1: \implies \sin x = a, \quad \text{при } |a| \leq 1:$$

$$x = (-1)^n \arcsin a + \pi n;$$

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$$\sin x = a, \quad \text{при } |a| \leq 1: \quad \blacktriangleleft$$

Замечание.

$$\sin x = a, \quad \text{при } |a| \leq 1: \longrightarrow \sin x = a, \quad \text{при } |a| \leq 1:$$

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$$y^2 - 3y + 2 = 0;$$

$$y = 1; y = 2;$$

$$\sin x = a, \quad \text{при } |a| \leq 1; \quad \sin x = a, \quad \text{при } |a| \leq 1:$$

$$\operatorname{tg} t \cdot \operatorname{ctg} t = 1$$

$\operatorname{tg} x = a$ имеет решение $\forall a$

$$x = \operatorname{arctg} a + \pi n;$$

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$$\operatorname{tg} t \cdot \operatorname{ctg} t = 1$$

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Решение.

$$\sin 7x (2 \cos x - 1) = 0;$$

$$\sin 7x = 0; \quad 2 \cos x - 1 = 0;$$

$$2 \cos x = 1;$$

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	$a = 0$	$a = -1$	$a = 1$
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$$7x = \pi n;$$

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t	$\frac{\pi}{6}$	$\frac{\pi}{3}$	$\frac{2\pi}{3}$	$\frac{5\pi}{6}$	$\frac{7\pi}{6}$	$\frac{4\pi}{3}$	$\frac{5\pi}{3}$	$\frac{11\pi}{6}$
cost	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{2}$	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$

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Замечание.

$$f_1(x) \cdot f_2(x) = 0;$$

$$\sin x = a, \quad \text{при } |a| \leq 1:$$

Решение.

$$\operatorname{ctg} x = 0; \quad \cos x - 1 = 0;$$

$$\cos x = 1;$$

t	0	$\frac{\pi}{6}$	$\frac{\pi}{4}$	$\frac{\pi}{3}$	$\frac{\pi}{2}$
ctg t	-	$\sqrt{3}$	1	$\frac{\sqrt{3}}{3}$	0

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$x = 2\pi n$ – это **посторонний корень**;

$$\sin x = a, \quad \text{при } |a| \leq 1: \quad \blacktriangleleft$$