

## Тригонометрические уравнения

### Частные случаи

$$\sin x = 0 \Leftrightarrow x = \pi k, k \in Z$$

$$\sin x = 1 \Leftrightarrow x = \frac{\pi}{2} + 2\pi k, k \in Z$$

$$\sin x = -1 \Leftrightarrow x = \frac{3\pi}{2} + 2\pi k, k \in Z$$

$$\cos x = 0 \Leftrightarrow x = \frac{\pi}{2} + \pi k, k \in Z$$

$$\cos x = 1 \Leftrightarrow x = 2\pi k, k \in Z$$

$$\cos x = -1 \Leftrightarrow x = \pi + 2\pi k, k \in Z$$

### Основные формулы

$$\sin x = a, |a| \leq 1 \Leftrightarrow x = \begin{cases} x = \arcsin a + 2\pi k, k \in Z \\ x = \pi - \arcsin a + 2\pi k, k \in Z \end{cases}$$

$$\cos x = a, |a| \leq 1 \Leftrightarrow x = \begin{cases} x = \arccos a + 2\pi k, k \in Z \\ x = -\arccos a + 2\pi k, k \in Z \end{cases}$$

$$\operatorname{tg} x = a \Leftrightarrow x = \operatorname{arctg} a + \pi k, k \in Z$$

$$\operatorname{ctg} x = a \Leftrightarrow x = \operatorname{arcctg} a + \pi k, k \in Z$$

### Свойства арк-функций

$$\arcsin x \in \left[-\frac{\pi}{2}; \frac{\pi}{2}\right]$$

$$\arccos x \in [0; \pi]$$

$$\operatorname{arctg} x \in \left(-\frac{\pi}{2}; \frac{\pi}{2}\right)$$

$$\operatorname{arcctg} x \in (0; \pi)$$

$$\arcsin(-x) = -\arcsin x$$

$$\arccos(-x) = \pi - \arccos x$$

$$\operatorname{arctg}(-x) = -\operatorname{arctg} x$$

$$\operatorname{arcctg}(-x) = \pi - \operatorname{arcctg} x$$