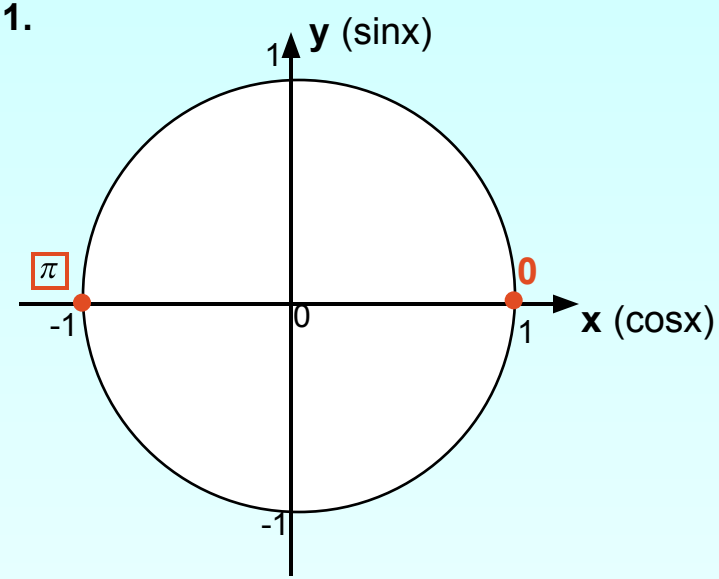
Решение простейших тригонометрических уравнений с помощью единичной окружности

Решить уравнения

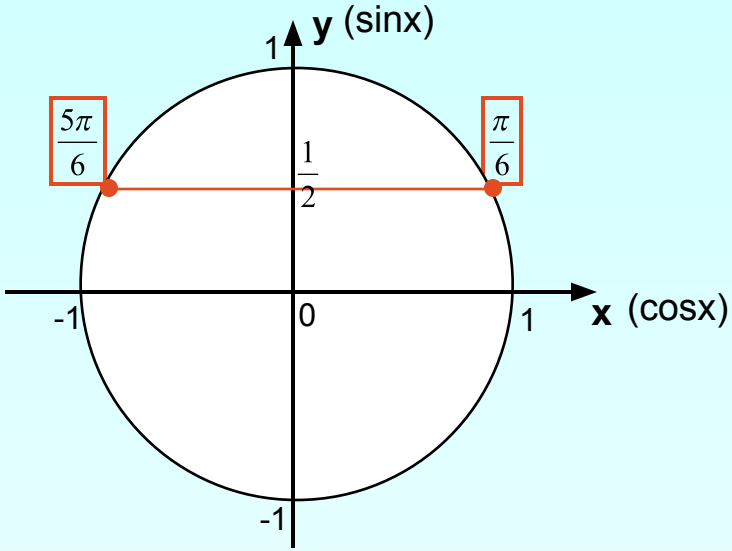
1.



$$\sin x = 0$$

$$x = \pi n,\ n \in Z$$

2.

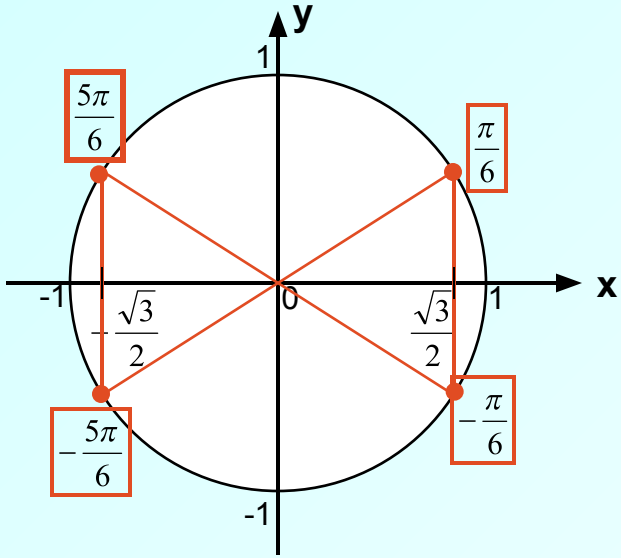


$$\sin x = \frac{1}{2}$$

$$\left[\begin{array}{l} x = \frac{\pi}{6} + 2\pi n,\ n \in Z \\ x = \frac{5\pi}{6} + 2\pi n,\ n \in Z \end{array}\right.$$

3. $\cos^2 x = \dfrac{3}{4}$

$$\cos x = \pm\frac{\sqrt{3}}{2}$$



$$\left[\begin{array}{l} x = \pm\dfrac{\pi}{6} + 2\pi n,\ n \in Z; \\ x = \pm\dfrac{5\pi}{6} + 2\pi n,\ n \in Z. \end{array}\right.$$

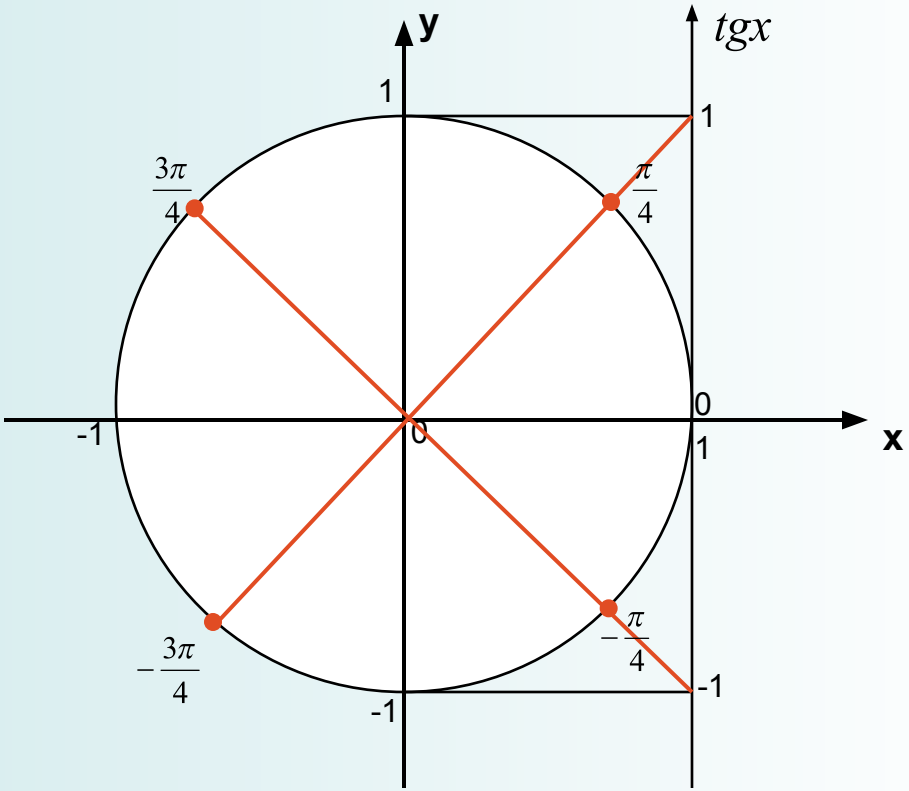
$$\left[\begin{array}{l} x = \dfrac{\pi}{6} + \pi n,\ n \in Z; \\ x = -\dfrac{\pi}{6} + \pi n,\ n \in Z. \end{array}\right.$$

$$x = \pm\frac{\pi}{6} + \pi n,\ n \in Z$$

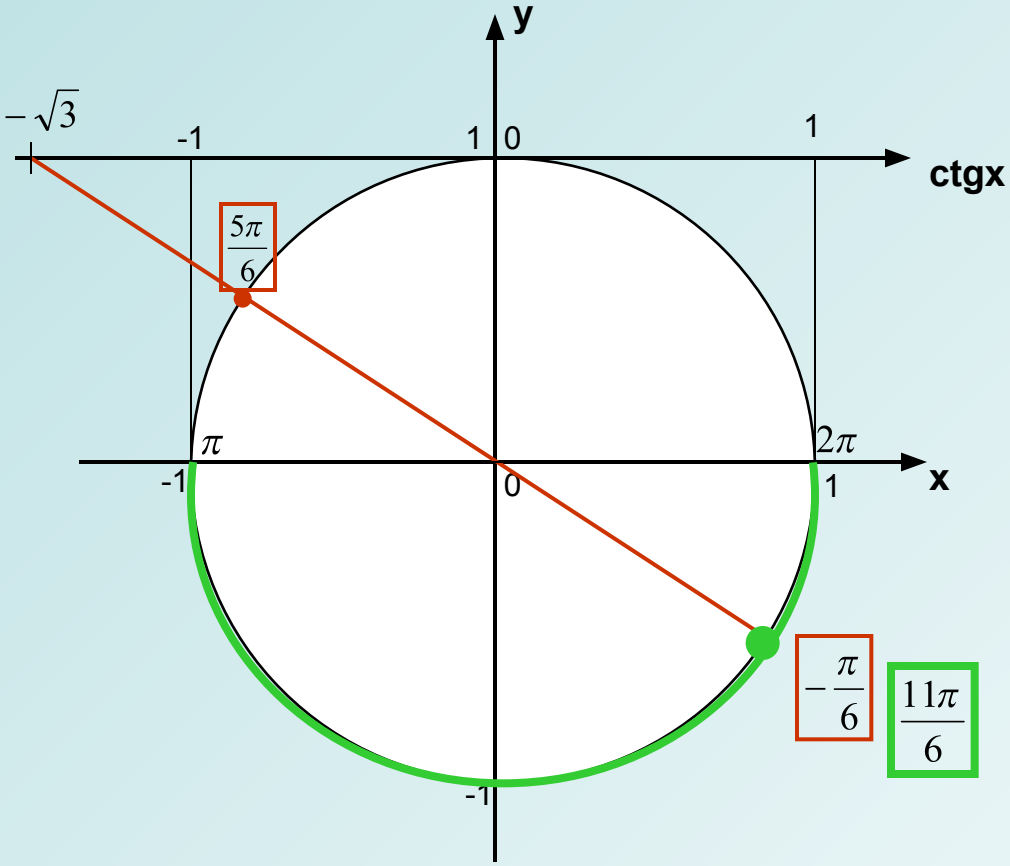
$$tg^2 x = 1$$

$$tgx = \pm 1$$

$$x = \frac{\pi}{4} + \frac{\pi}{2} n,\ n \in Z$$

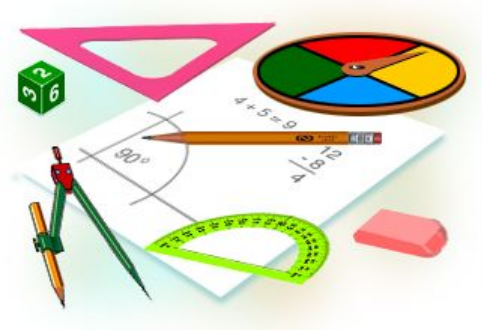


$$ctgx = -\sqrt{3},\ \text{где x} \in [\pi; 2\pi]$$



$$x = -\frac{\pi}{6} + \pi n,\ n \in Z$$

$$\frac{5\pi}{6} + \pi = \frac{11\pi}{6}$$



Аналитический способ отбора корней из промежутка

$$x = -\frac{\pi}{6} + \pi n,\ n \in Z$$

$$\pi \le -\frac{\pi}{6} + \pi n \le 2\pi,\ n \in Z;$$

$$1 \le -\frac{1}{6} + n \le 2,\ n \in Z;$$

$$6 \le -1 + 6n \le 12,\ n \in Z;$$

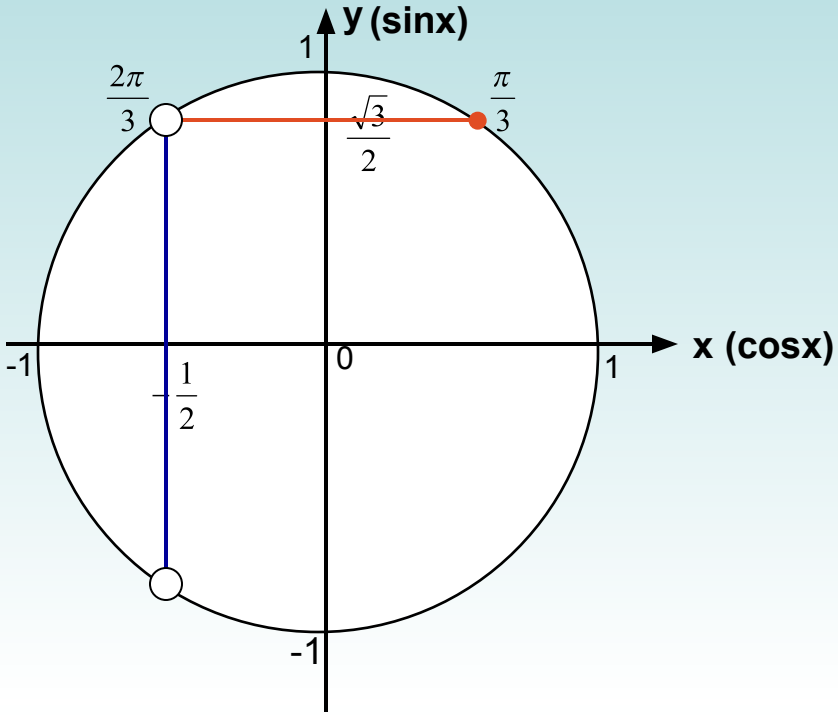
$$7 \le 6n \le 13,\ n \in Z;$$

$$1\frac{1}{6} \le n \le 2\frac{1}{6},\ n \in Z;$$

$$n = 2; \quad x = -\frac{\pi}{6} + 2\pi = \frac{11\pi}{6}$$

ОТВЕТ: $\frac{11\pi}{6}$

$$\frac{\sin x - \frac{\sqrt{3}}{2}}{\cos x + \frac{1}{2}} = 0$$



$$\begin{cases} \sin x = \frac{\sqrt{3}}{2}; \\ \cos x \neq -\frac{1}{2}. \end{cases}$$

$$x = \frac{\pi}{3} + 2\pi n, \in Z$$

Самостоятельная работа

Решите уравнения

$$\cos x = 0$$

$$\sin x = 1$$

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

$$\cos x = -\frac{\sqrt{2}}{2}$$

$$ctgx = \sqrt{3}$$

$$tgx = \frac{\sqrt{3}}{3}$$

$$tgx \cdot \cos x = 1$$

$$ctgx \cdot \sin x = 1$$

Решить уравнения и к каждому уравнению начертить окружность
и отметить корни, которые получили при решении уравнений

Решение уравнений отправить на электронную почту.
УДАЧИ, моя дорогая
311 группа!!!