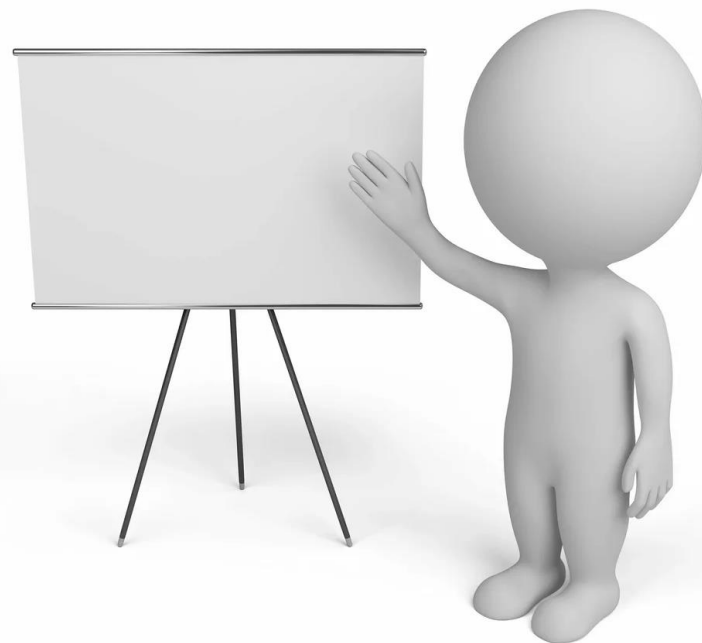


# РЕШЕНИЕ ТРИГОНОМЕТРИЧЕСКИХ НЕРАВЕНСТВ

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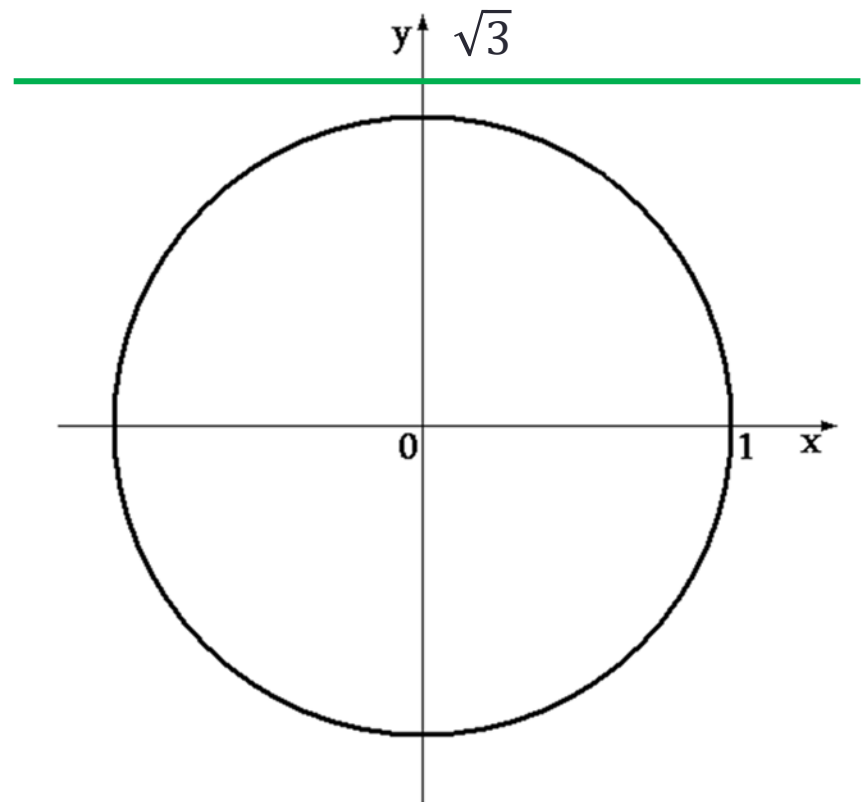
## Неравенство вида $\sin x > a$ , $\sin x < a$ , $\sin x \geq a$ , $\sin x \leq a$

- 1)  $\sin x > \sqrt{3}$

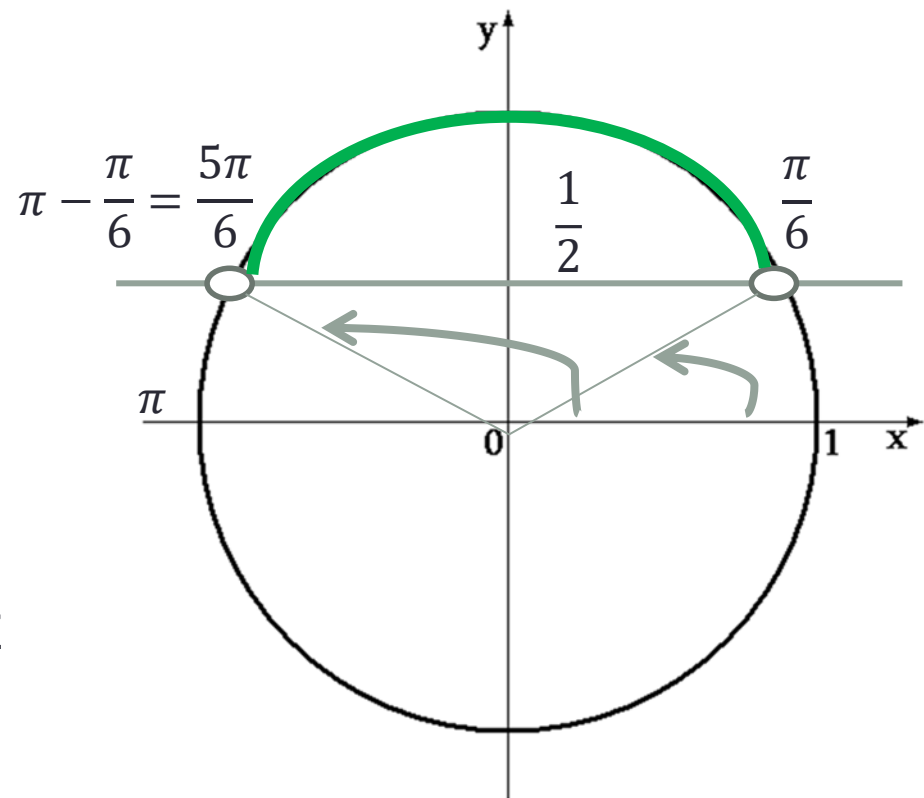
Нет решений

- 2)  $\sin x < \sqrt{3}$

- $x$ -любое число

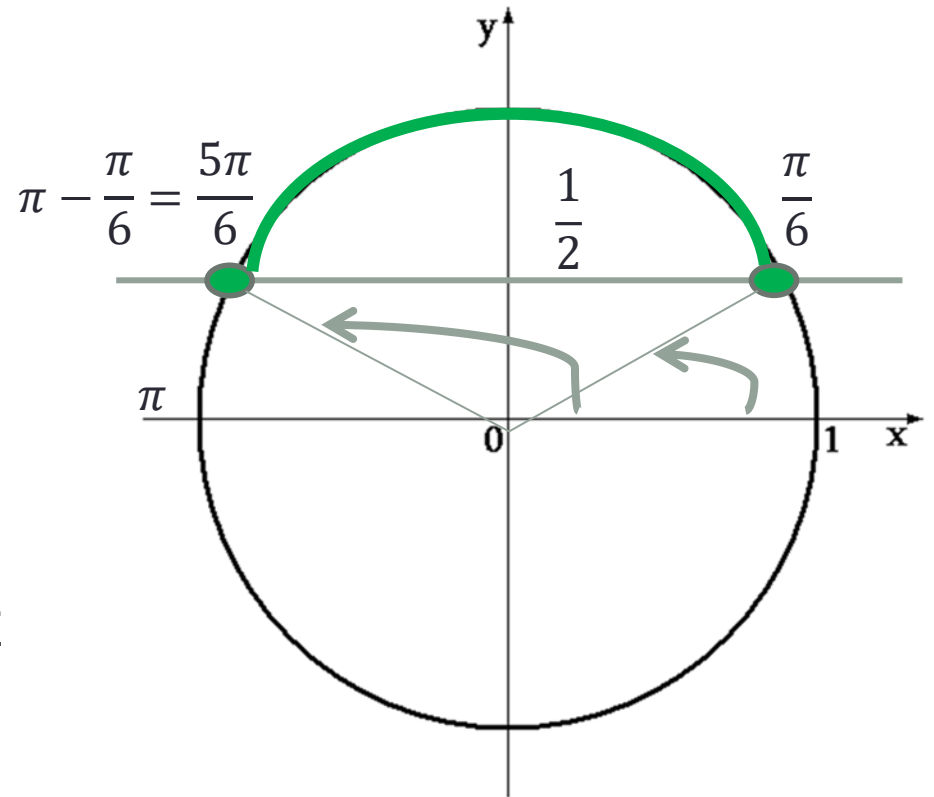


• 3)  $\sin x > \frac{1}{2}$



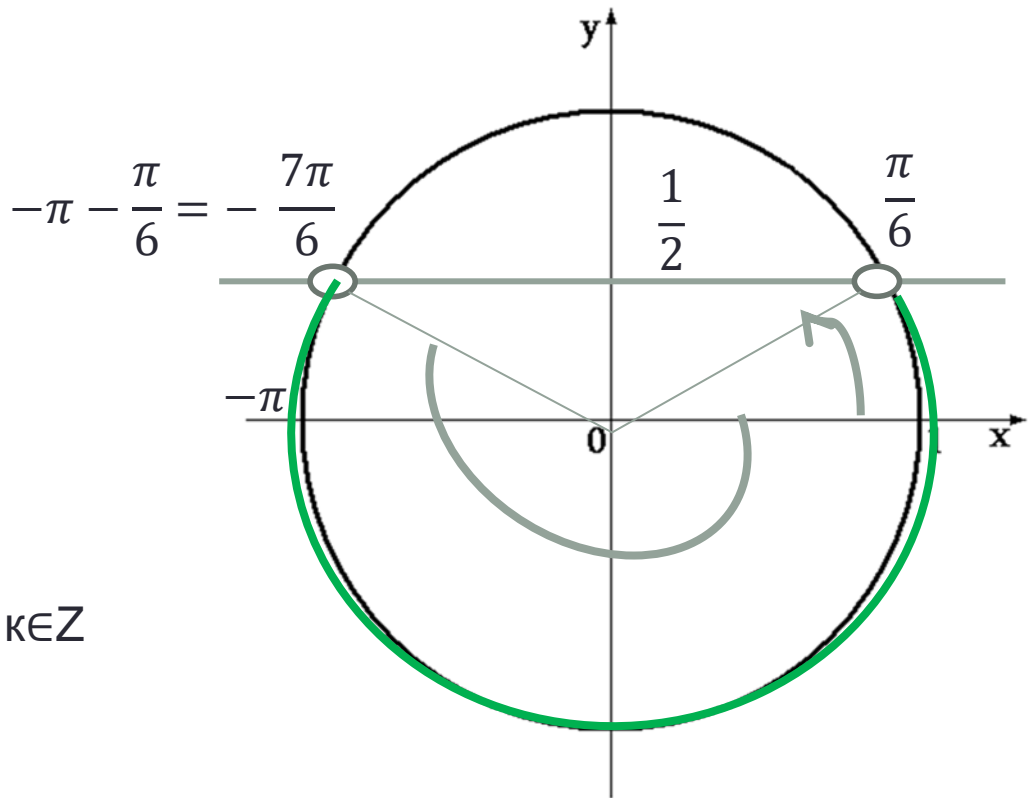
ОТВЕТ:  $\frac{\pi}{6} + 2\pi k < x < \frac{5\pi}{6} + 2\pi k, k \in \mathbb{Z}$

• 3)  $\sin x \geq \frac{1}{2}$



ОТВЕТ:  $\frac{\pi}{6} + 2\pi k \leq x \leq \frac{5\pi}{6} + 2\pi k, k \in \mathbb{Z}$

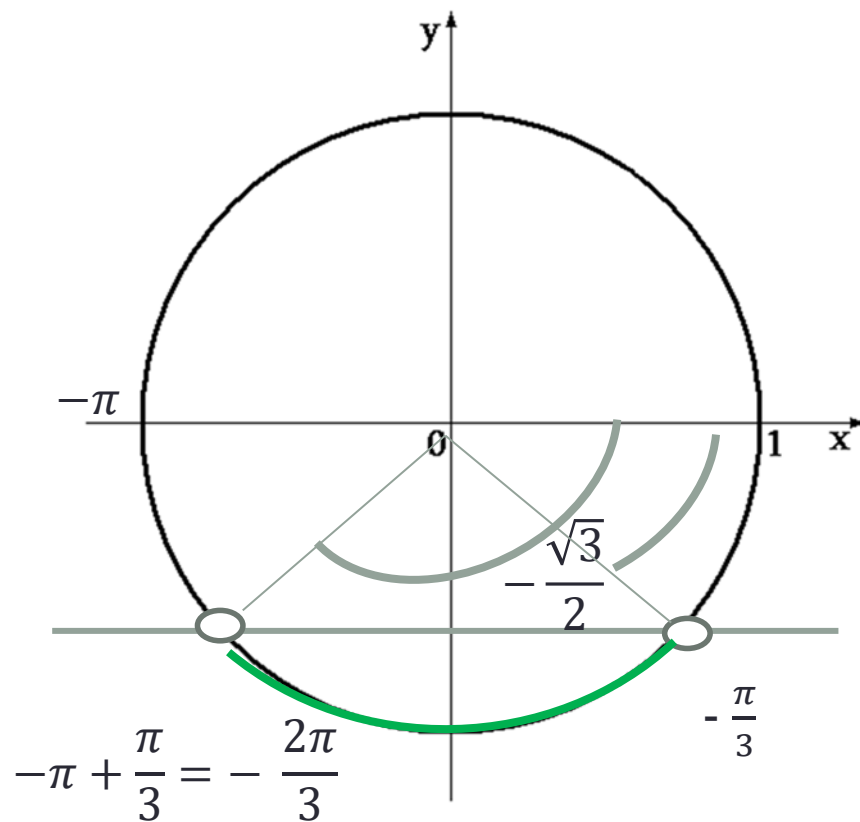
• 3)  $\sin x < \frac{1}{2}$



ОТВЕТ:  $-\frac{7\pi}{6} + 2\pi k < x < \frac{\pi}{6} + 2\pi k, k \in \mathbb{Z}$

• 3)  $\sin x < -\frac{\sqrt{3}}{2}$

ОТВЕТ:  $-\frac{2\pi}{3} + 2\pi k < x < -\frac{\pi}{3} + 2\pi k, k \in \mathbb{Z}$

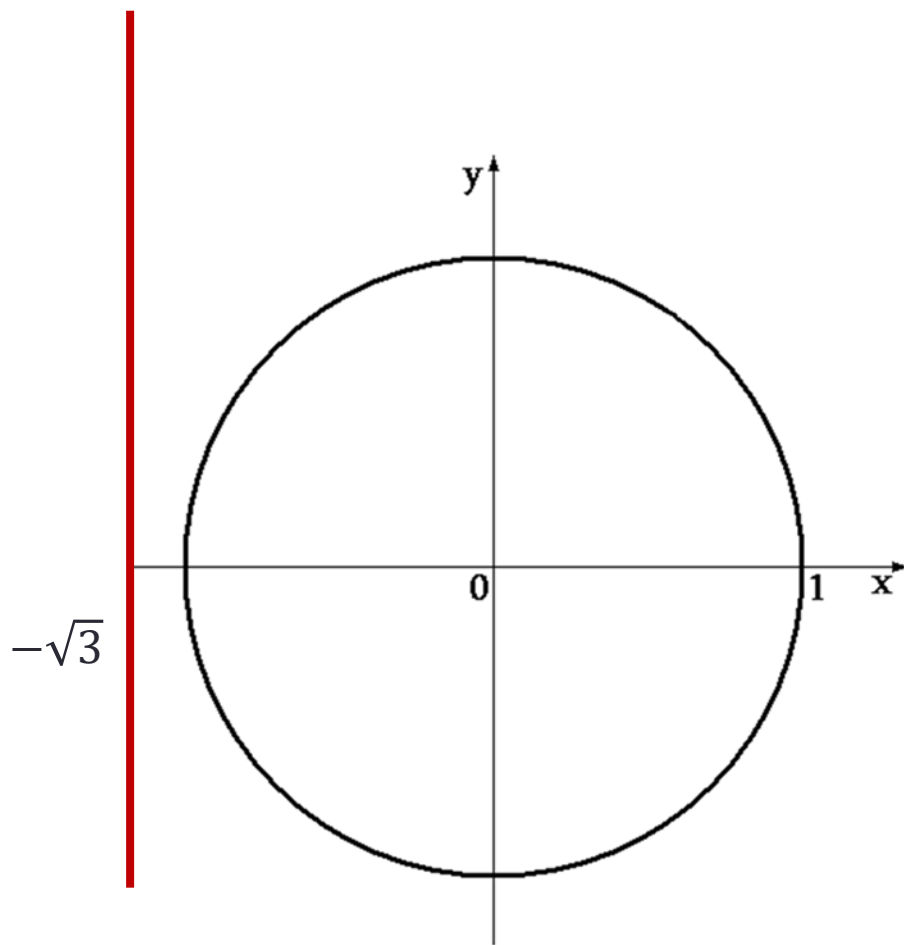


## Неравенство вида $\cos x > a$ , $\cos x < a$ , $\cos x \geq a$ , $\cos x \leq a$

- 1)  $\cos x > -\sqrt{3}$
- $x$ -любое число

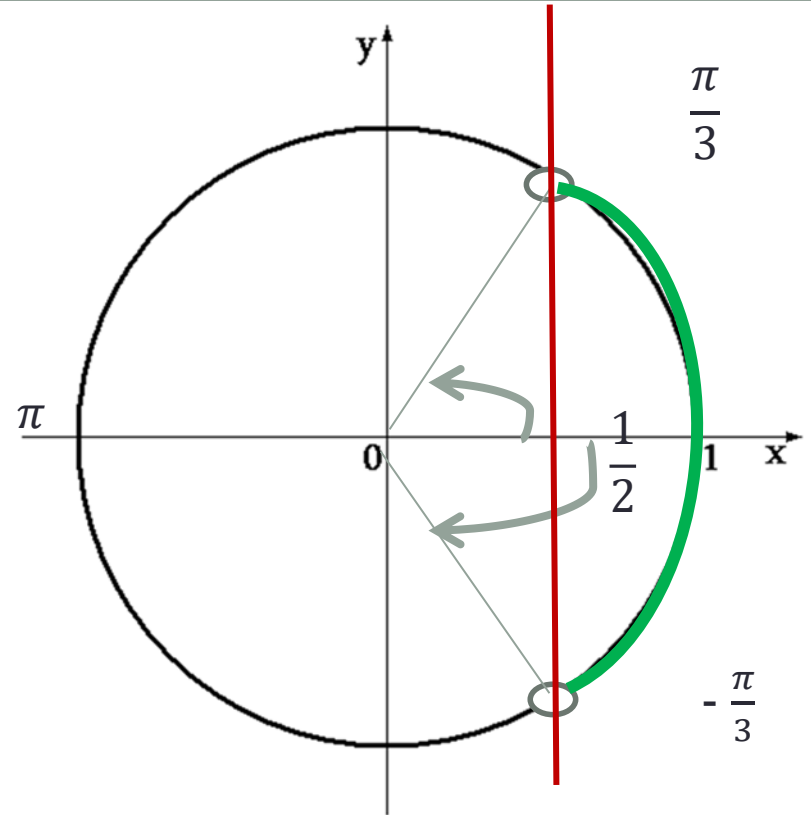
- 2)  $\cos x < -\sqrt{3}$

Нет решений



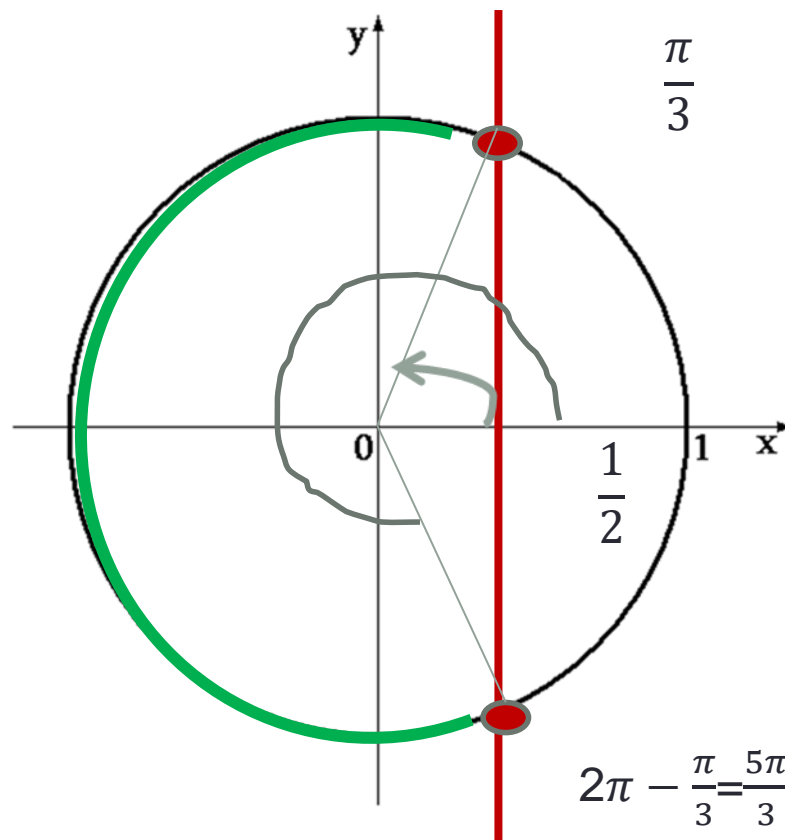
• 3)  $\cos x > \frac{1}{2}$

ОТВЕТ:  $-\frac{\pi}{3} + 2\pi k < x < \frac{\pi}{3} + 2\pi k, k \in \mathbb{Z}$



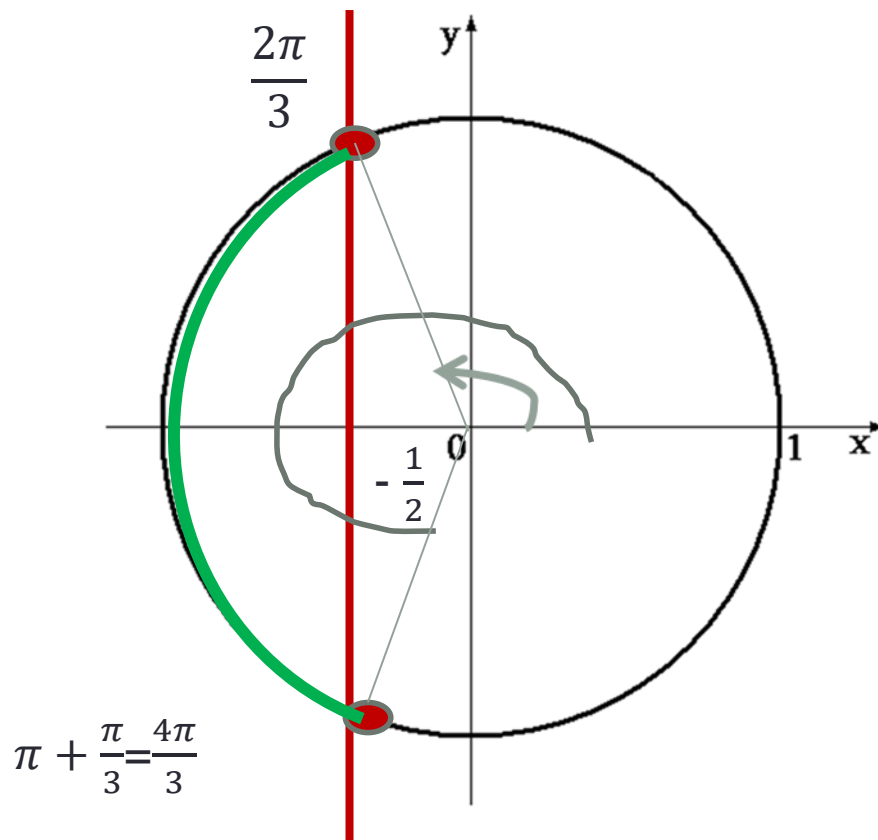
$$\cos x \leq \frac{1}{2}$$

ОТВЕТ:  $\frac{\pi}{3} + 2\pi k \leq x \leq \frac{5\pi}{3} + 2\pi k, k \in \mathbb{Z}$



$$\cos x \leq -\frac{1}{2}$$

$$\text{ОТВЕТ: } \frac{2\pi}{3} + 2\pi k \leq x \leq \frac{4\pi}{3} + 2\pi k, k \in \mathbb{Z}$$



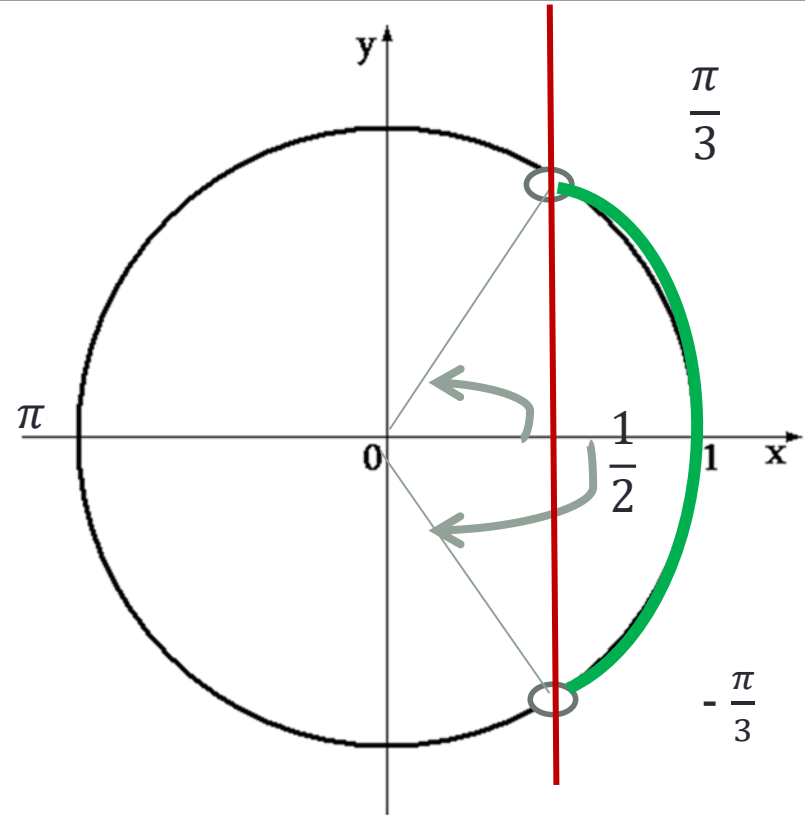
- 3)  $\cos\left(\frac{x}{3} + 2\right) > \frac{1}{2}$

$$-\frac{\pi}{3} + 2\pi k < \frac{x}{3} + 2 < \frac{\pi}{3} + 2\pi k, k \in \mathbb{Z}$$

$$-\pi - 6 + 6\pi k < x < \pi - 6 + 6\pi k, k \in \mathbb{Z}$$

ОТВЕТ:

$$-\pi - 6 + 6\pi k < x < \pi - 6 + 6\pi k, k \in \mathbb{Z}$$

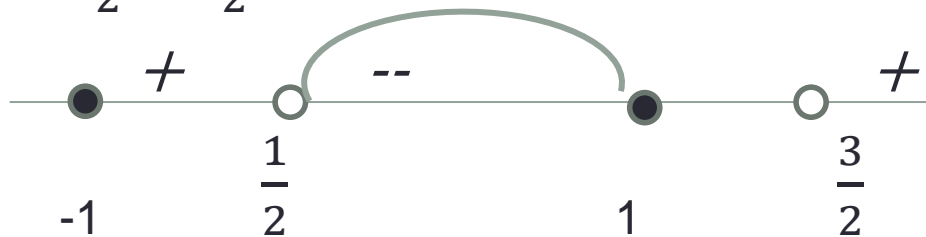


Решить неравенство  $4\cos^2 x - 8\cos x + 3 < 0$

Введем переменную  $\cos x = t$ ,  $-1 \leq t \leq 1$

$$4t^2 - 8t + 3 < 0$$

$$4\left(t - \frac{1}{2}\right)\left(t - \frac{3}{2}\right) < 0$$



$$\frac{1}{2} < t \leq 1$$

$$\frac{1}{2} < \cos x \leq 1 \quad -\frac{\pi}{3} + 2\pi k < x < \frac{\pi}{3} + 2\pi k, \quad k \in \mathbb{Z}$$