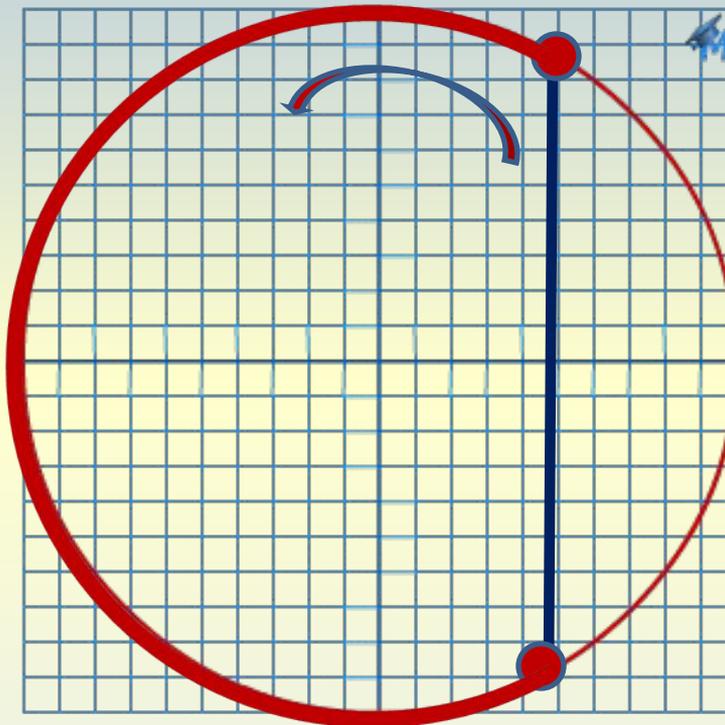
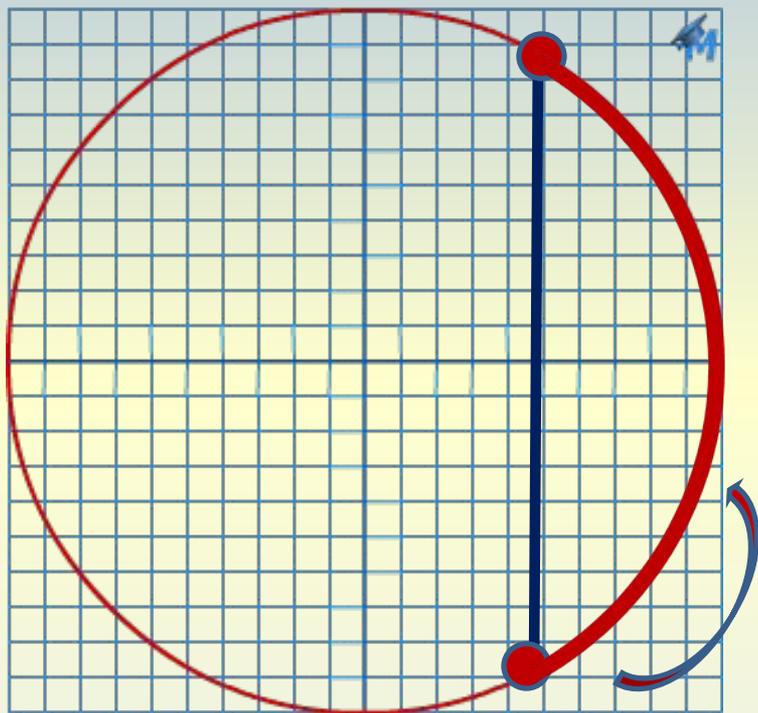


Общий вид решения тригонометрических

$\cos x \geq a$ неравенств
 $|a| \leq 1$

$\cos x \leq a$

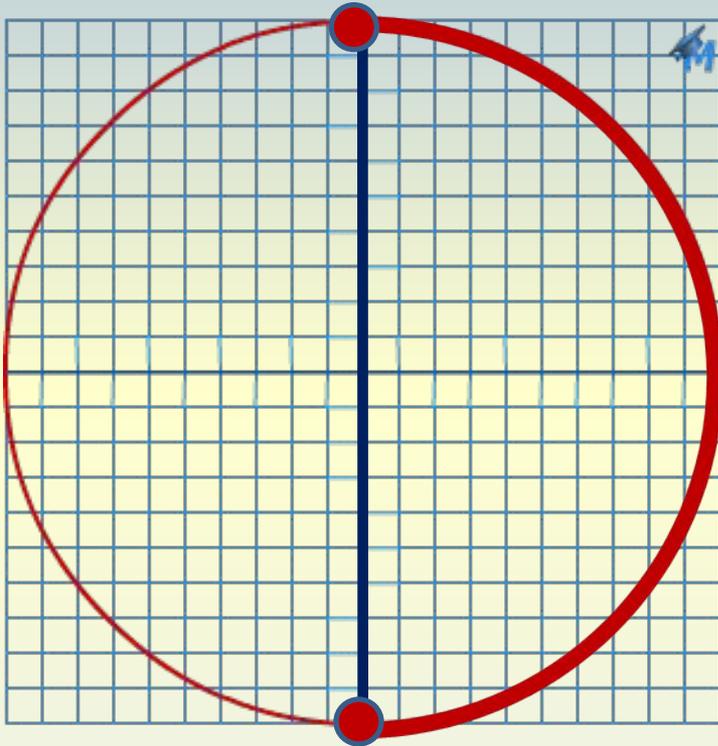


$$-\arccos a + 2\pi n \leq x \leq \arccos a + 2\pi n$$

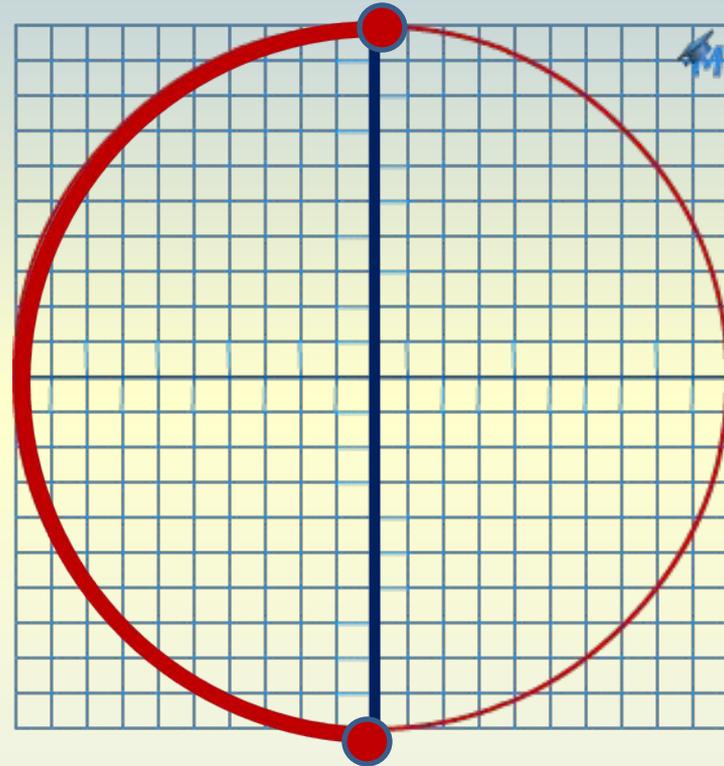
$$\arccos a + 2\pi n \leq x \leq 2\pi - \arccos a + 2\pi n$$

Частные случаи

$$\cos x \geq 0$$



$$\cos x \leq 0$$



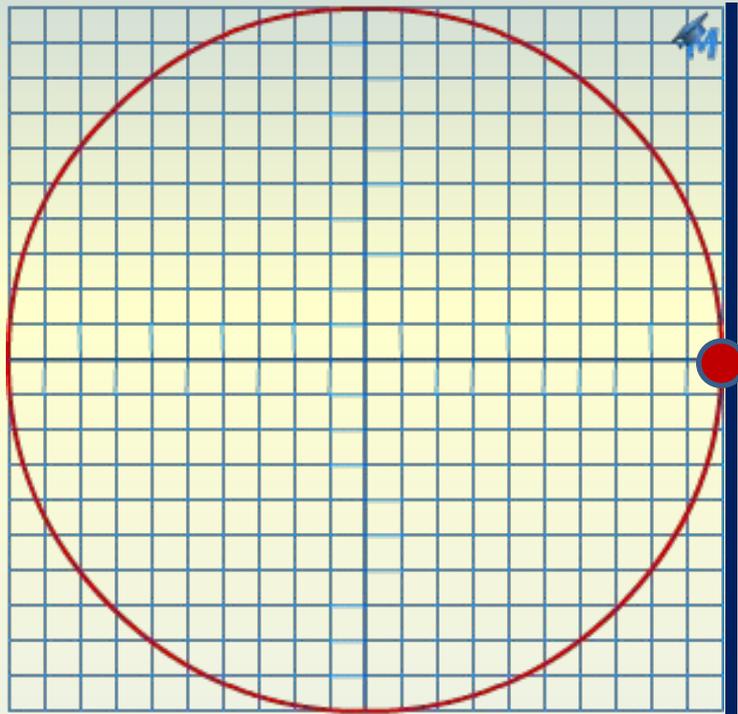
$$-\pi/2 + 2\pi n \leq x \leq \pi/2 + 2\pi n$$

$$\pi/2 + 2\pi n \leq x \leq 3\pi/2 + 2\pi n$$

Частные случаи (аналогично для $a = -1$)

1) $\cos x \geq 1$

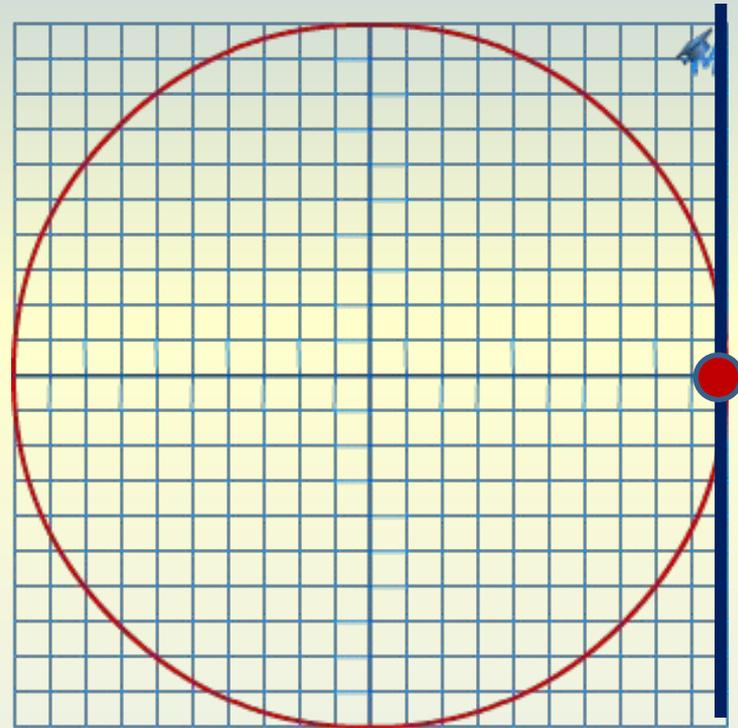
2) $\cos x > 1$



- 1) $x = 2\pi n$
2) Нет решения

1) $\cos x \leq 1$

2) $\cos x < 1$



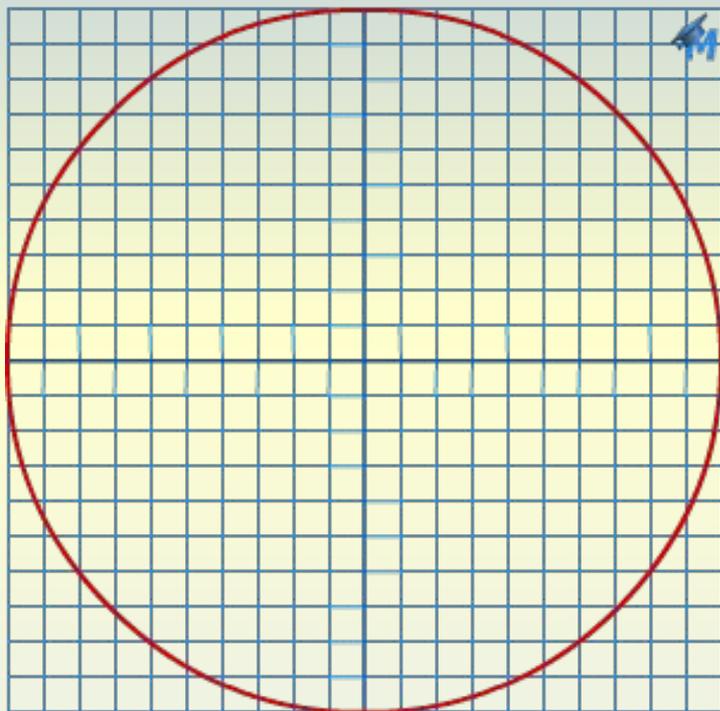
- 1) $x \in \mathbb{R}$
2) $x \in \mathbb{R}$, кроме $2\pi n$

Частные случаи:

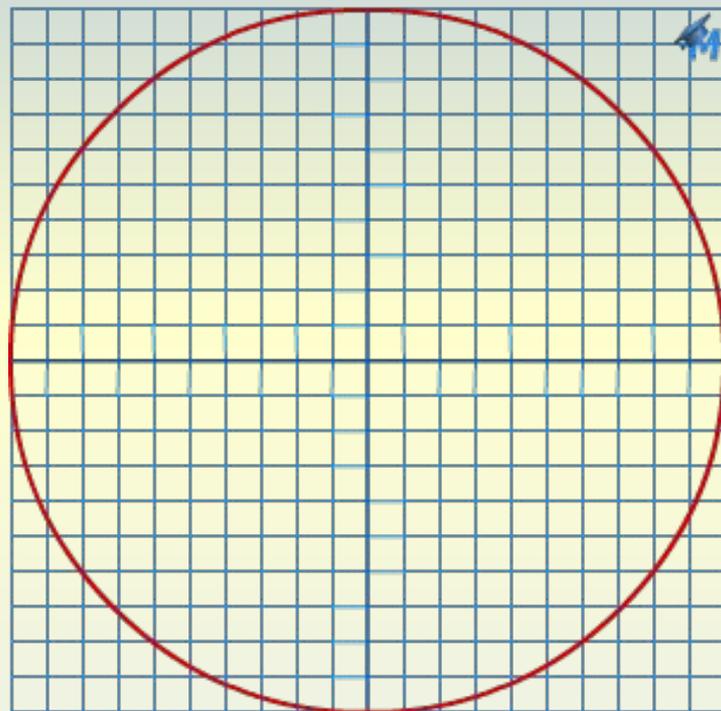
$$a > 1 \quad (a < -1)$$

$$\cos x \geq a$$

$$\cos x \leq a$$



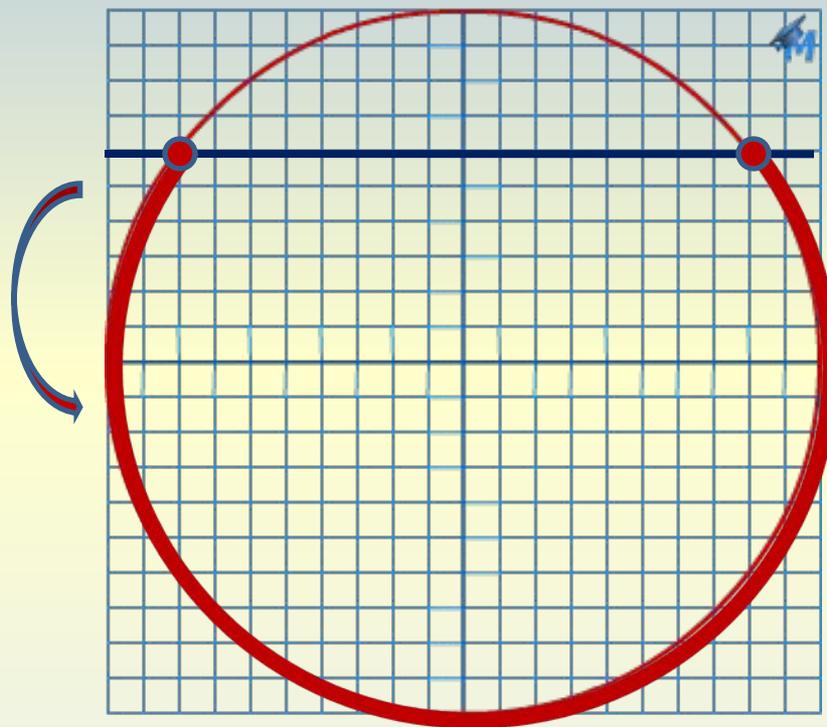
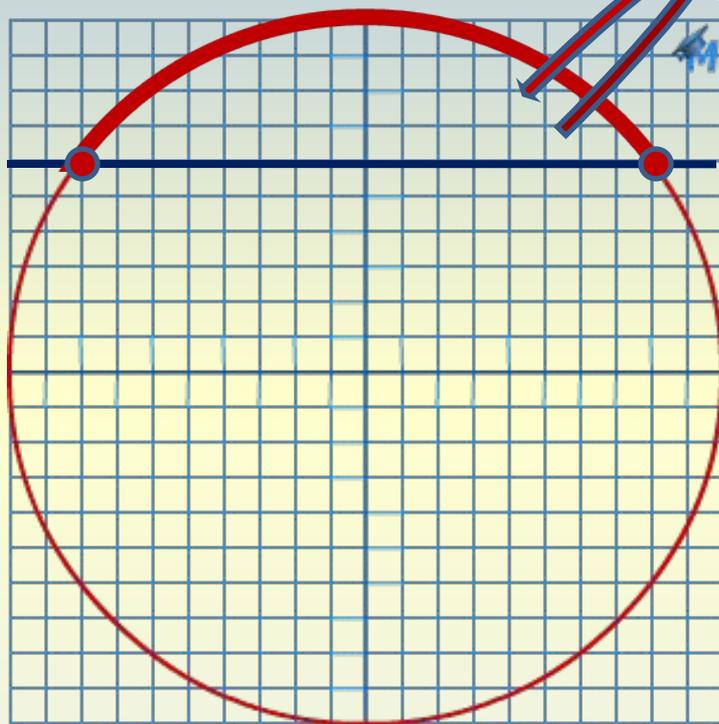
Нет решения
($x \in \mathbb{R}$)



$x \in \mathbb{R}$
(Нет решения)

Общий вид решения тригонометрических

$\sin x \geq a$ **неравенств** $\sin x \leq a$
 $|a| \leq 1$

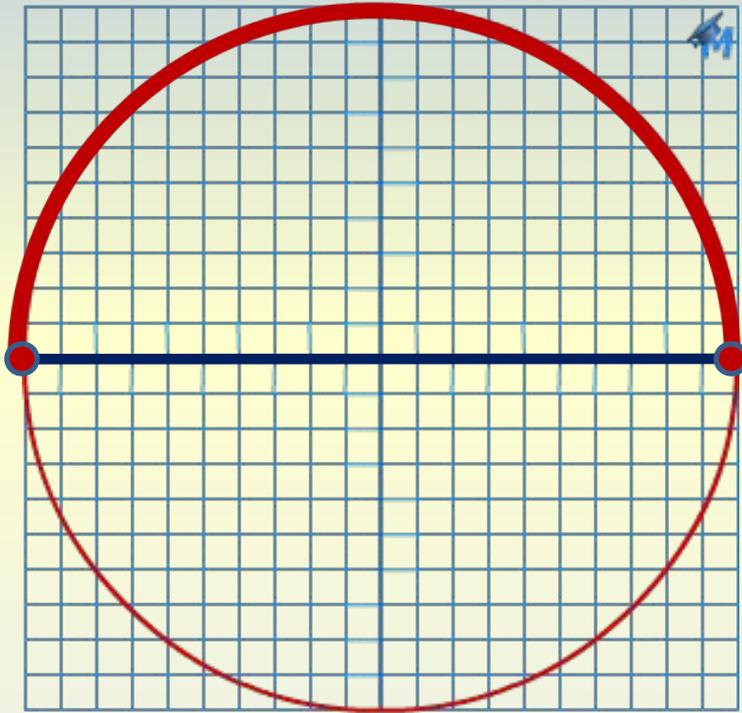


$$\arcsin a + 2\pi n \leq x \leq \pi - \arcsin a + 2\pi n$$

$$\pi - \arcsin a + 2\pi n \leq x \leq 2\pi + \arcsin a + 2\pi n$$

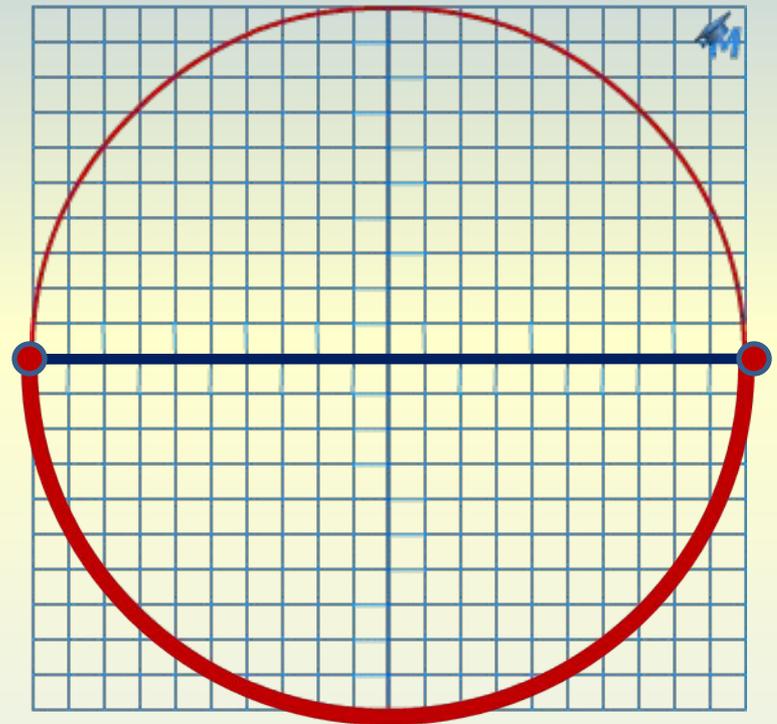
Частные случаи

$$\sin x \geq 0$$



$$2\pi n \leq x \leq \pi + 2\pi n$$

$$\sin x \leq 0$$

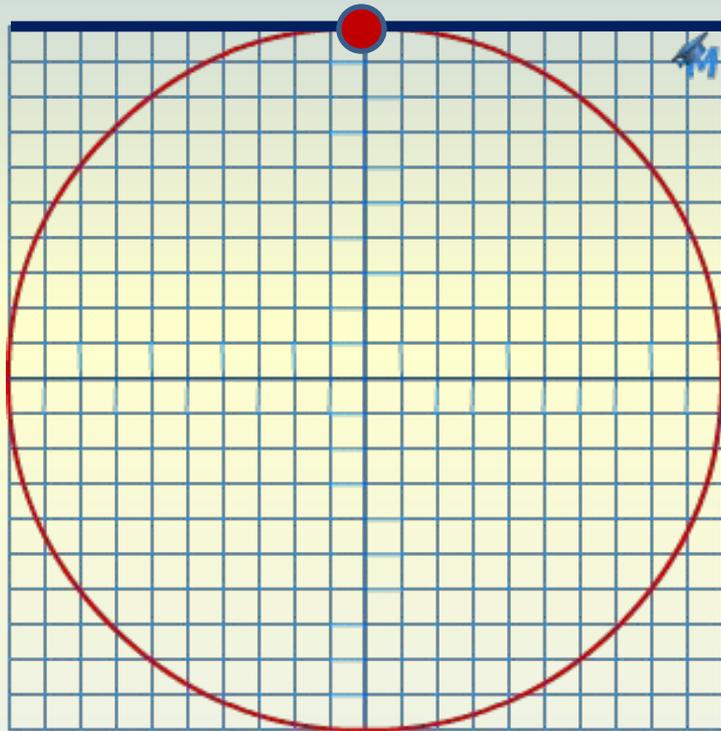


$$\pi + 2\pi n \leq x \leq 2\pi + 2\pi n$$

Частные случаи (аналогично для $a = -1$)

1) $\sin x \geq 1$

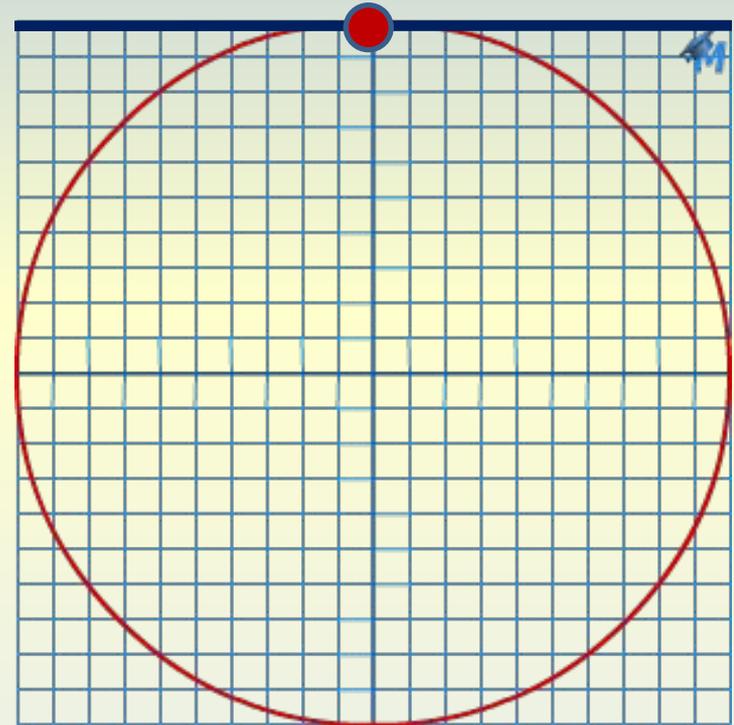
2) $\sin x > 1$



- 1) $x = \pi/2 + 2\pi n$
2) Нет решения

1) $\sin x \leq 1$

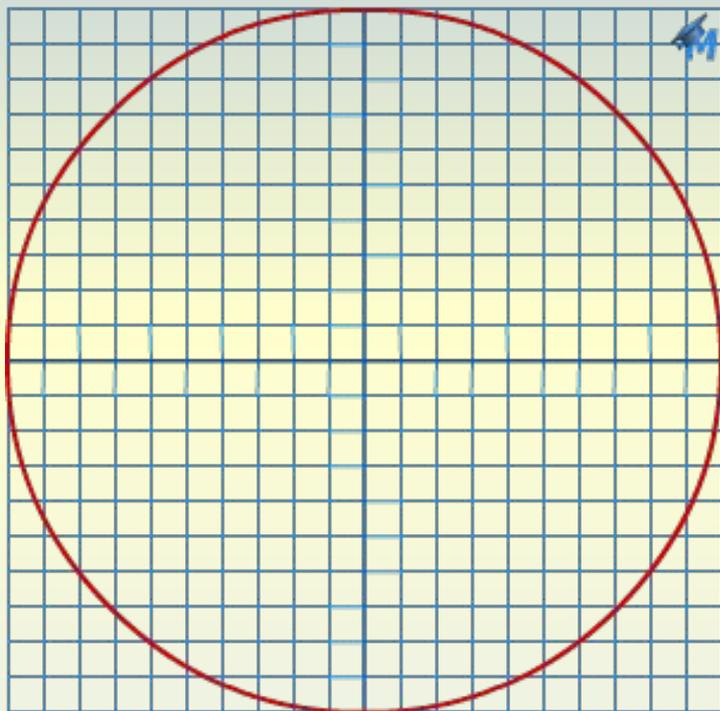
2) $\sin x < 1$



- 1) $x \in \mathbb{R}$
2) $x \in \mathbb{R}$, кроме $\pi/2 + 2\pi n$

Частные случаи:

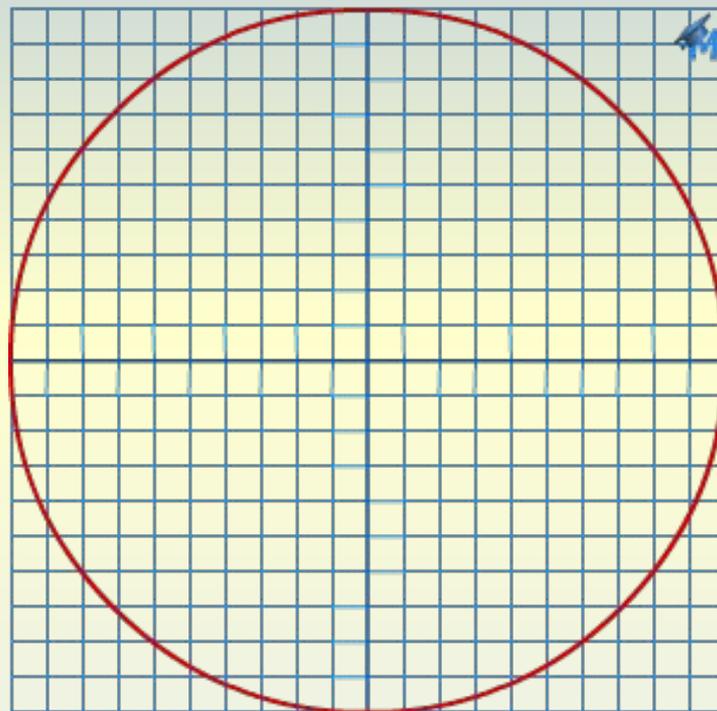
$$\sin x \geq a$$



Нет решения
($x \in \mathbb{R}$)

$$a > 1 \quad (a < -1)$$

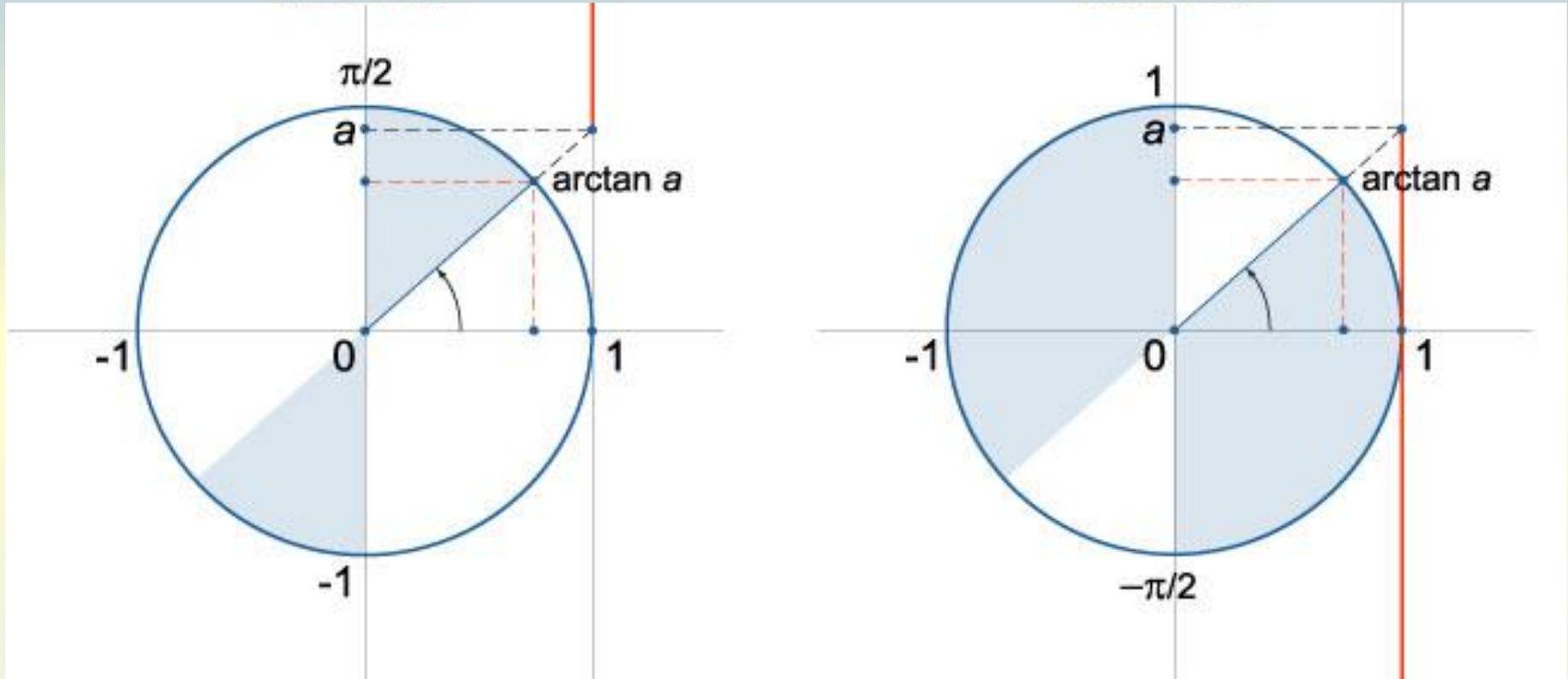
$$\sin x \leq a$$



$x \in \mathbb{R}$
(Нет решения)

Общий вид решения тригонометрических

$\operatorname{tg} x \geq a$ **неравенств** **$\operatorname{tg} x \leq a$**

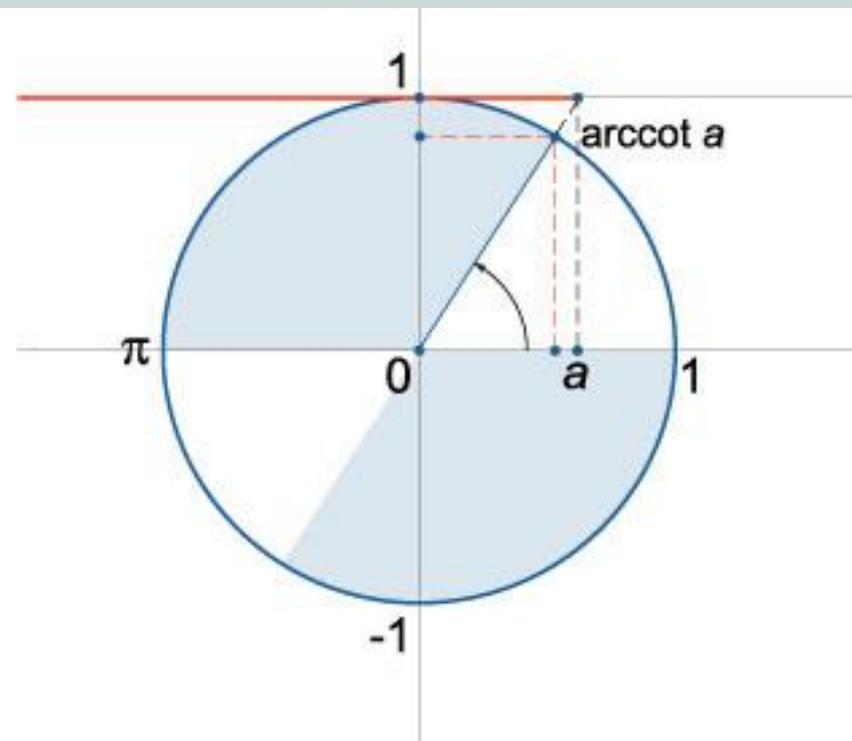
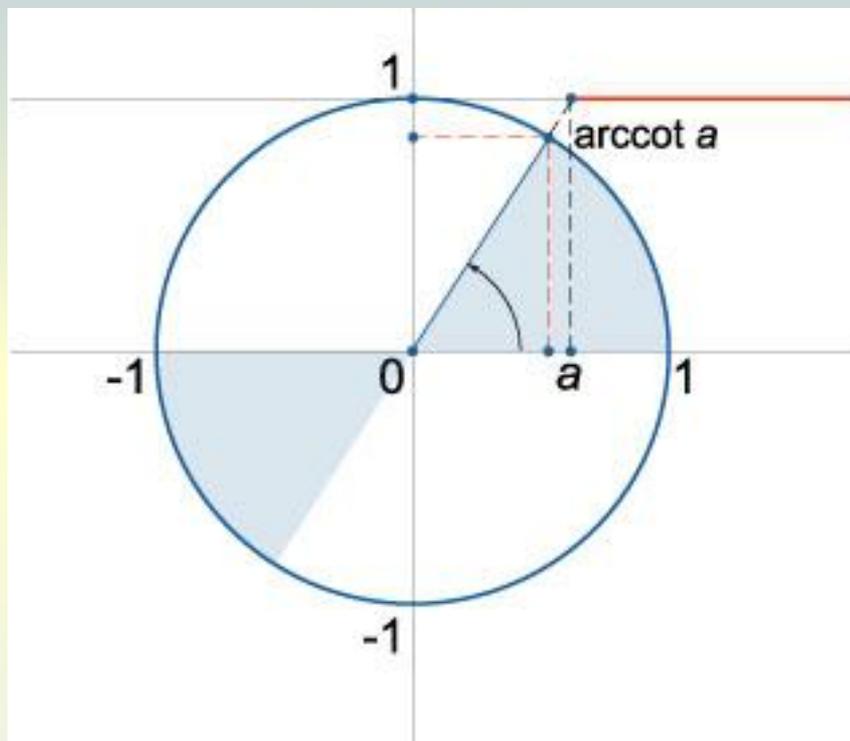


$$\arctg a + \Pi n \leq x < \Pi/2 + \Pi n$$

$$-\Pi/2 + \Pi n < x \leq \arctg a + \Pi n$$

Общий вид решения тригонометрических

$\operatorname{ctg} x \geq a$ **неравенств** **$\operatorname{ctg} x \leq a$**



$$\Pi n < x \leq \operatorname{arccotg} a + \Pi n$$

$$\operatorname{arccotg} a + \Pi n \leq x < \Pi + \Pi n$$