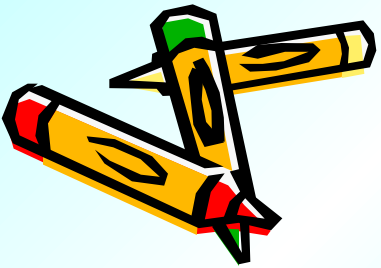
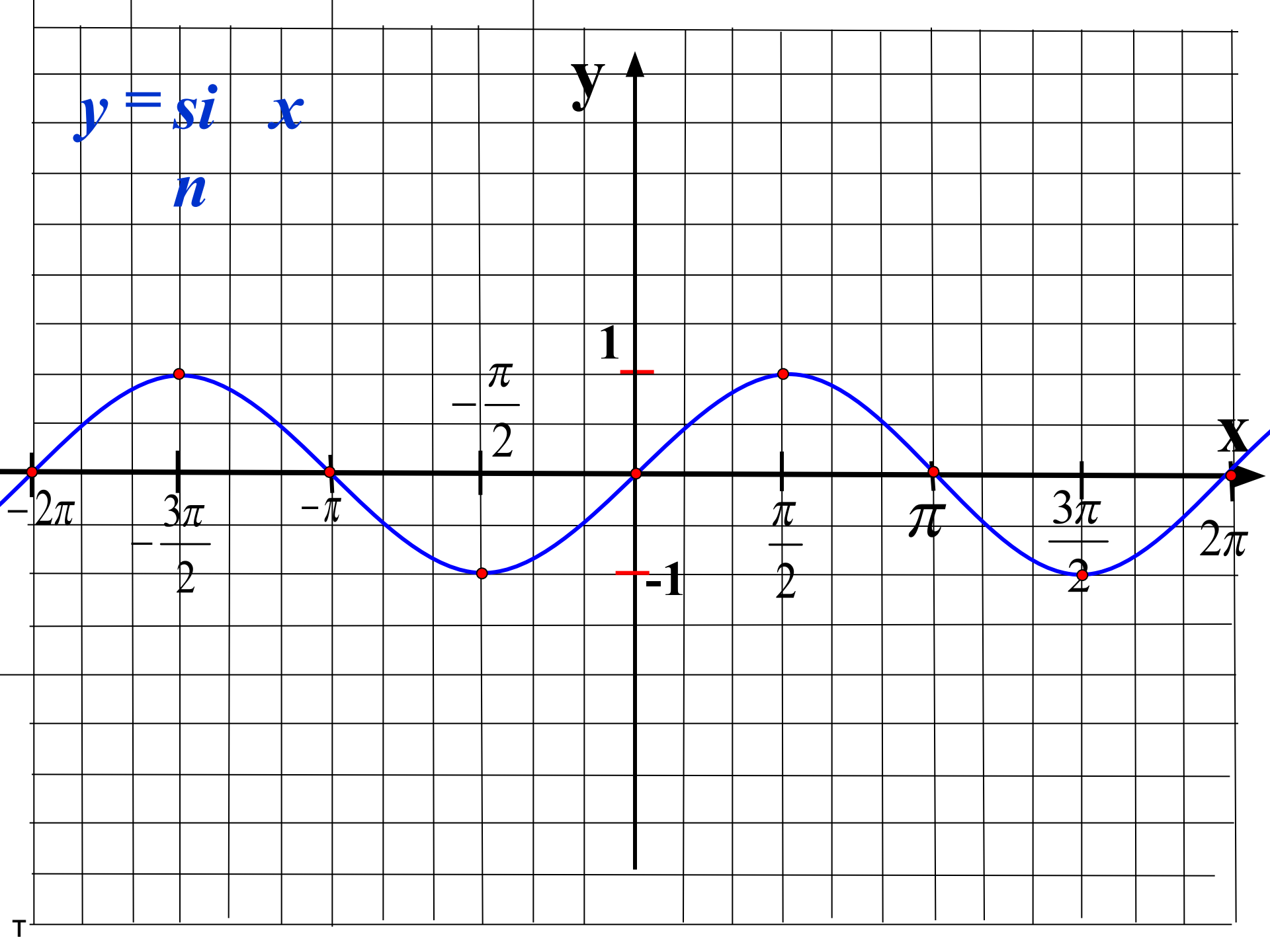
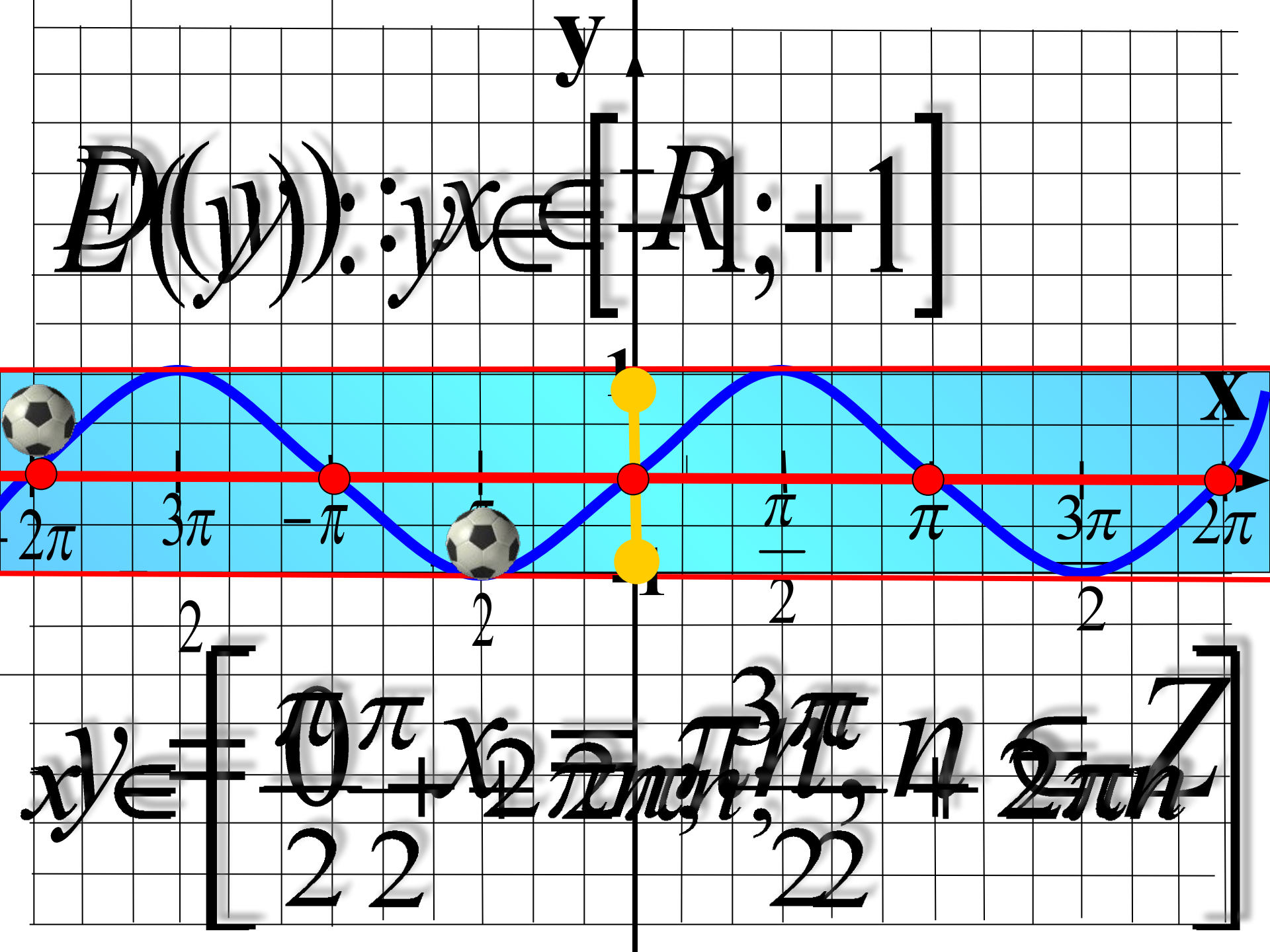
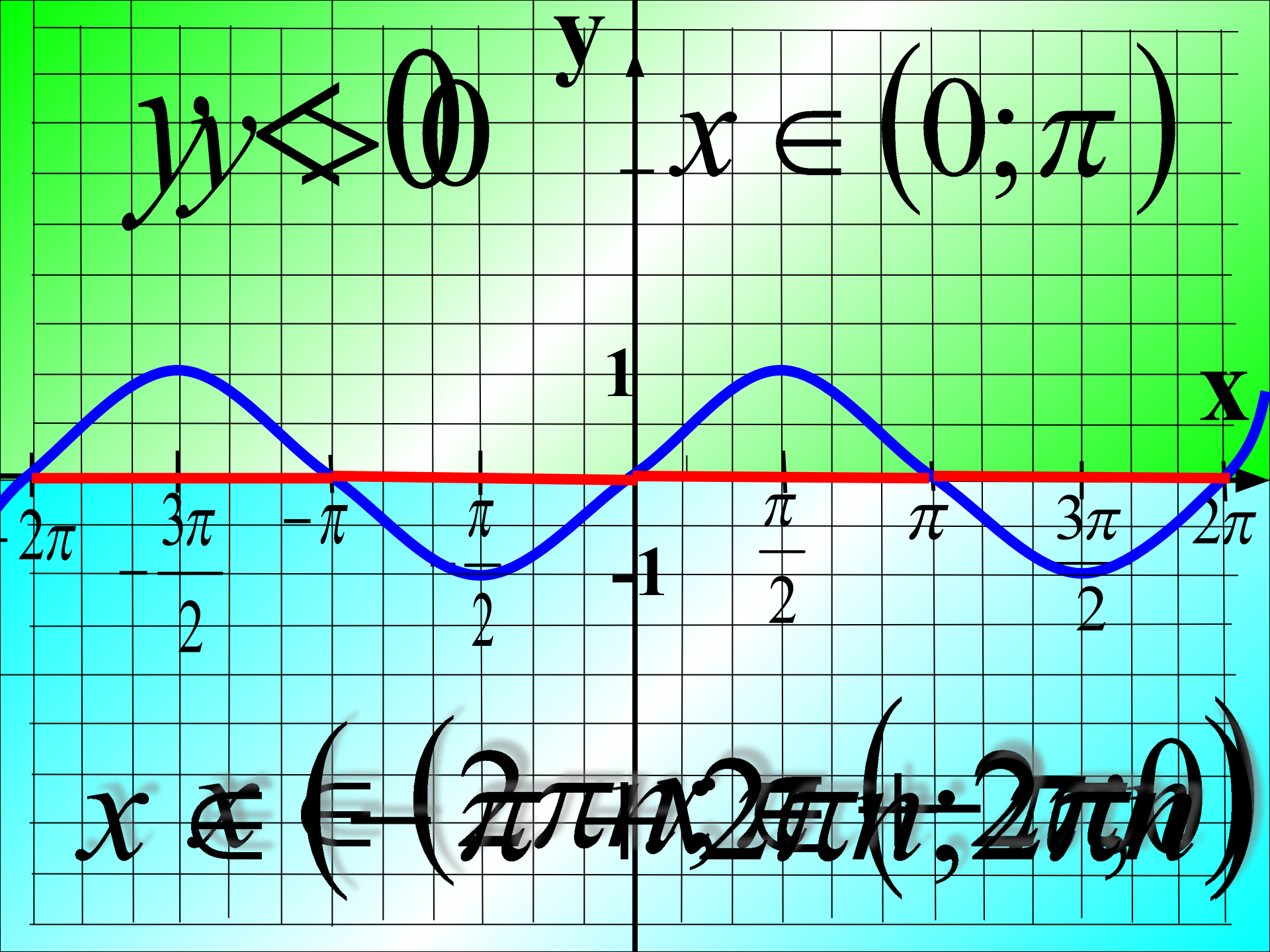
Функция y=sinx
Свойства.
Преобразование графиков.



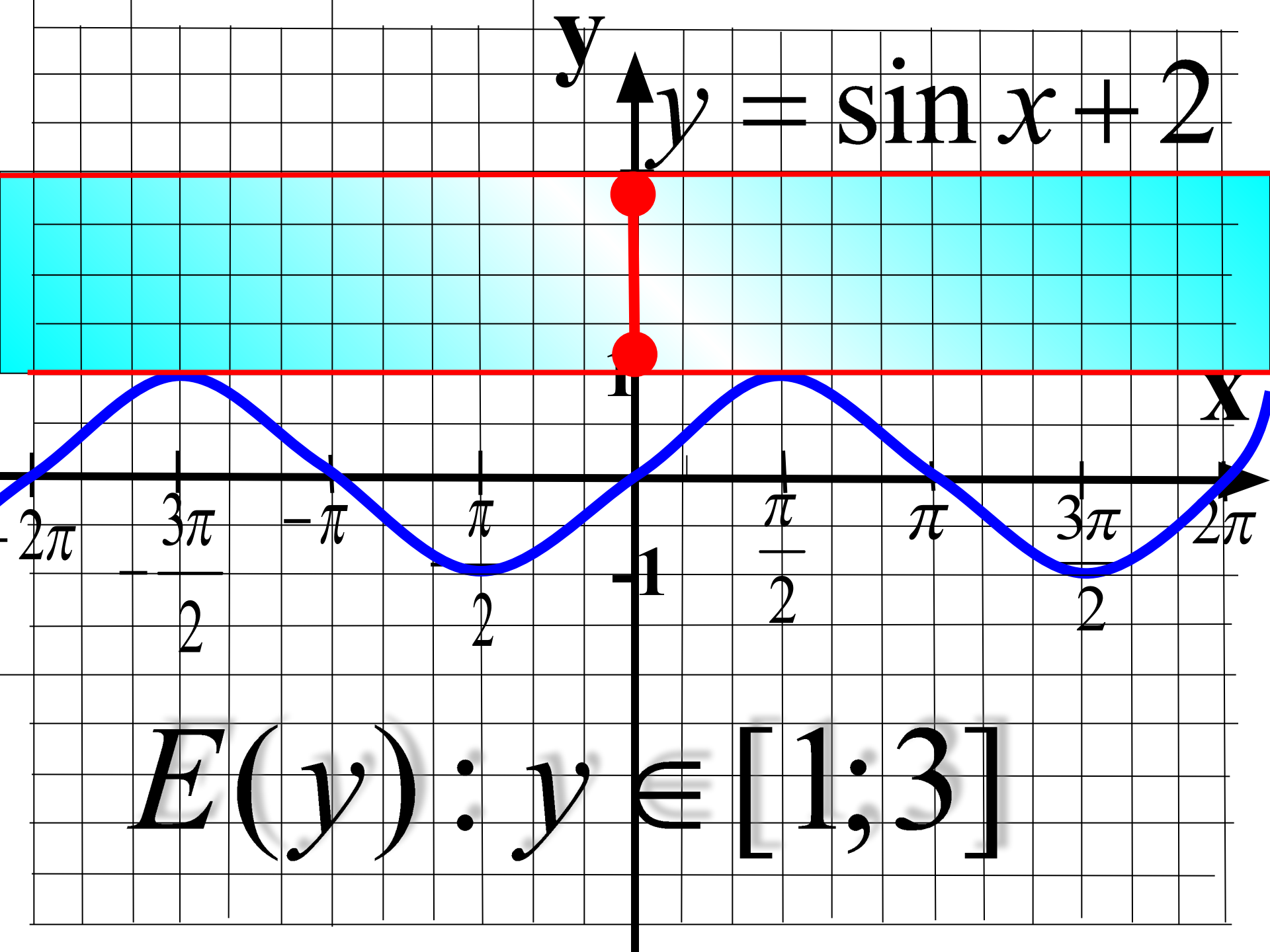

y = sin x
y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π


y
x
1
-1
-2π
-3π/2
-π
-π/2
π/2
π
3π/2
2π
D((y)): yx∈∈R
E(y): x∈[-1;+1]
y∈[0+2πn; π+2πn]
x∈[-π/2+2πn; 3π/2+2πn]

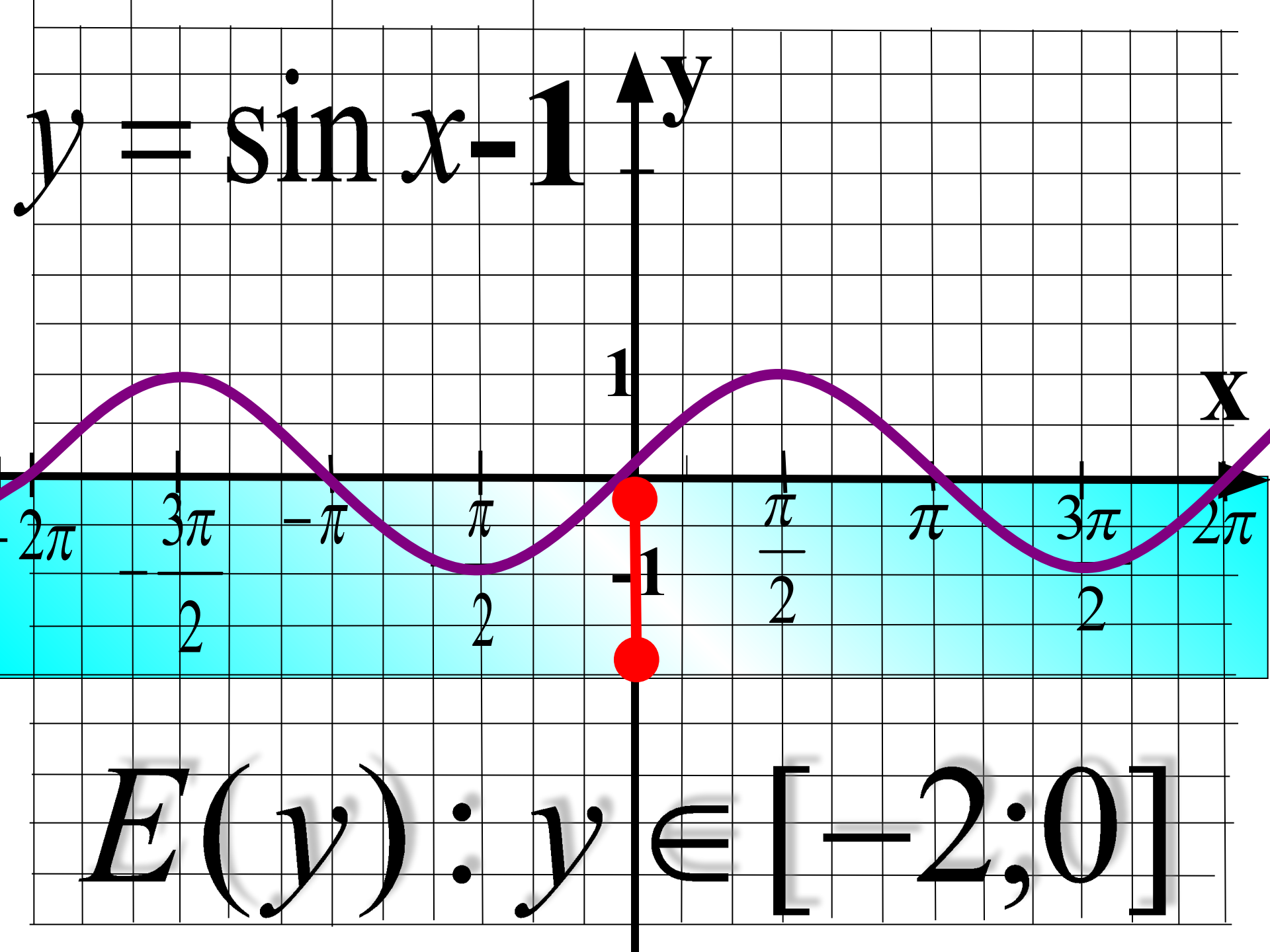
$y > 0$ при $x \in (0;\pi)$



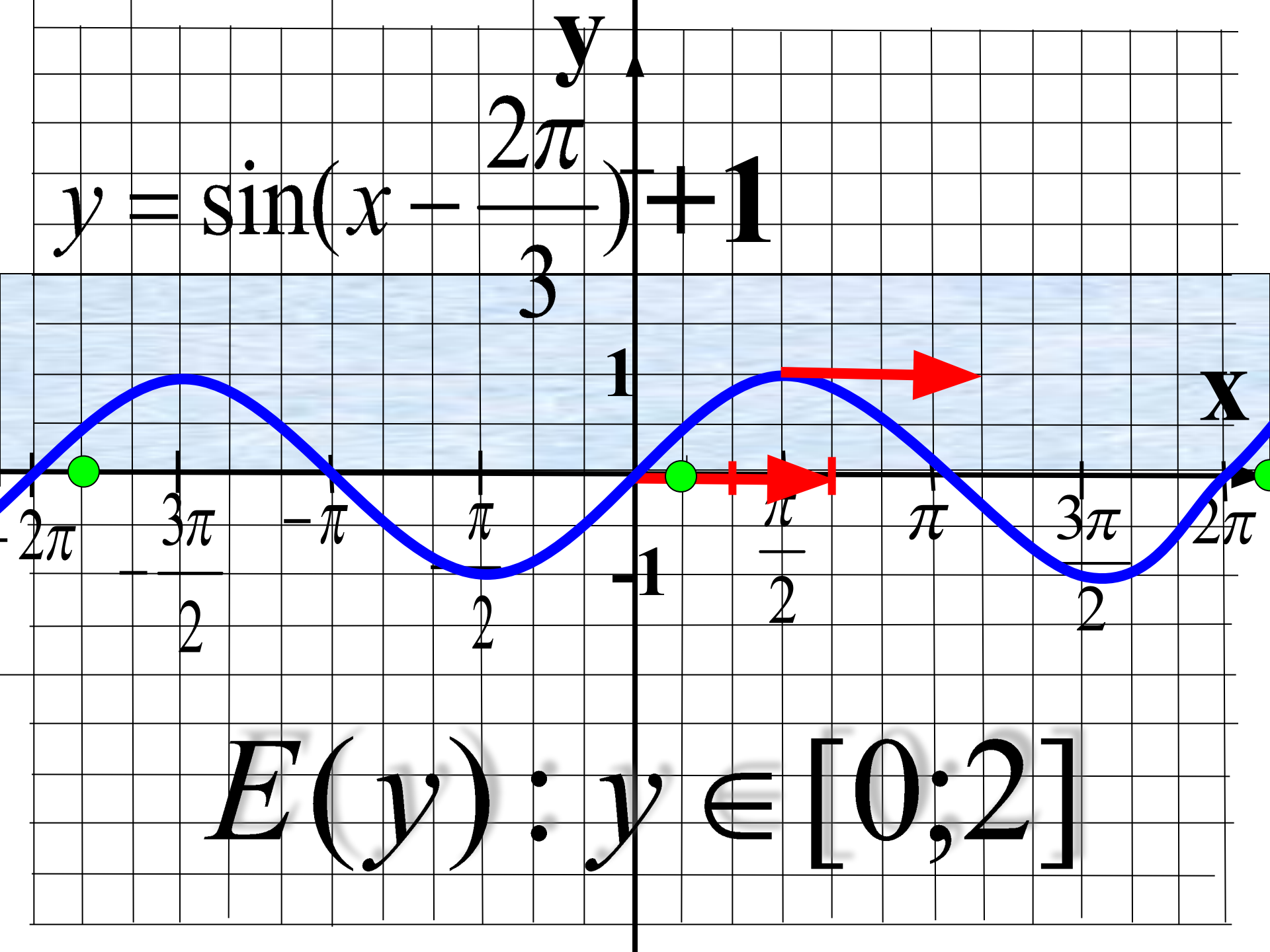
$x \in (2\pi n; \pi + 2\pi n)$

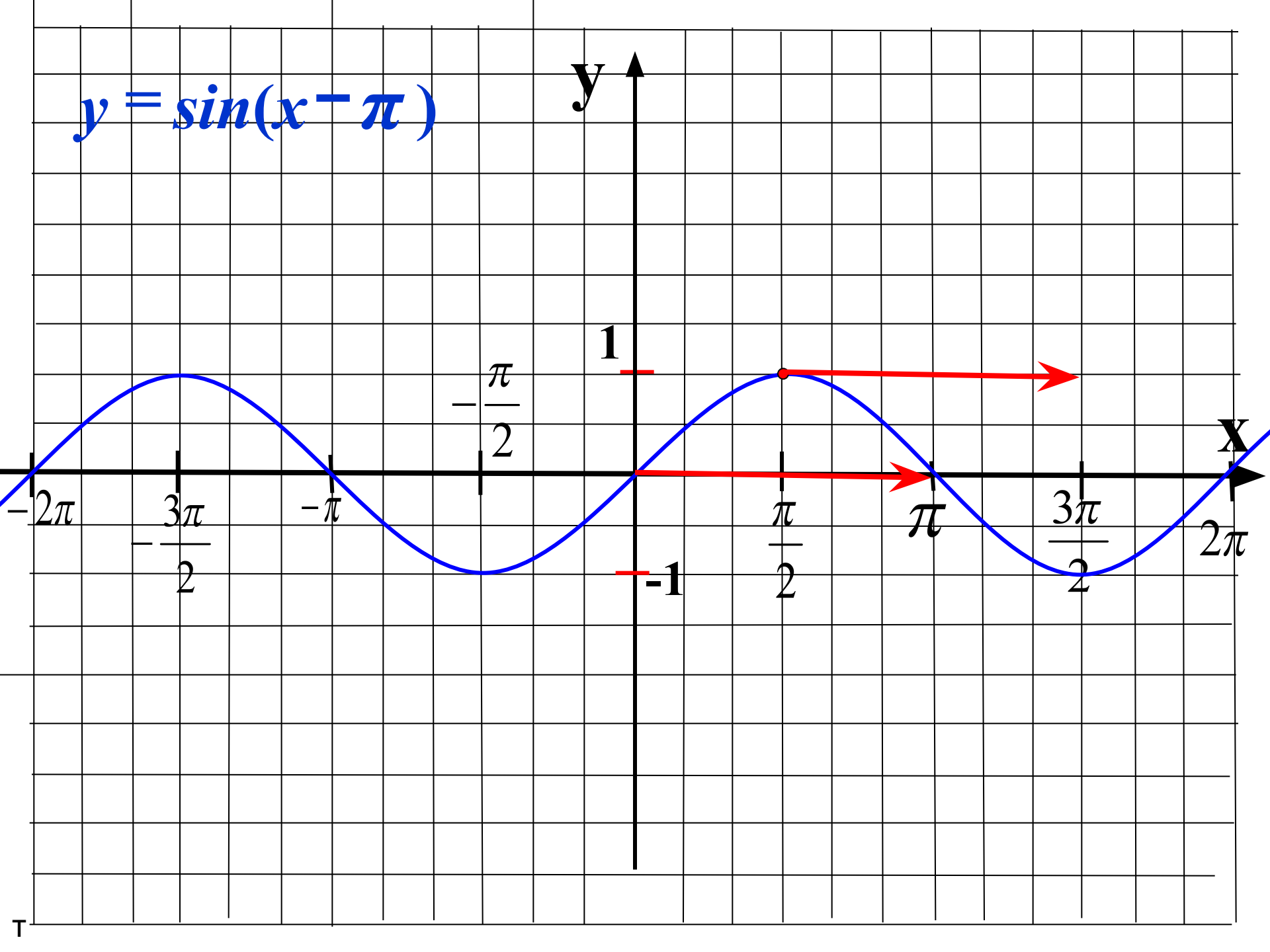

y
x
$y = \sin x + 2$
3
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
$E(y): y \in [1;3]$

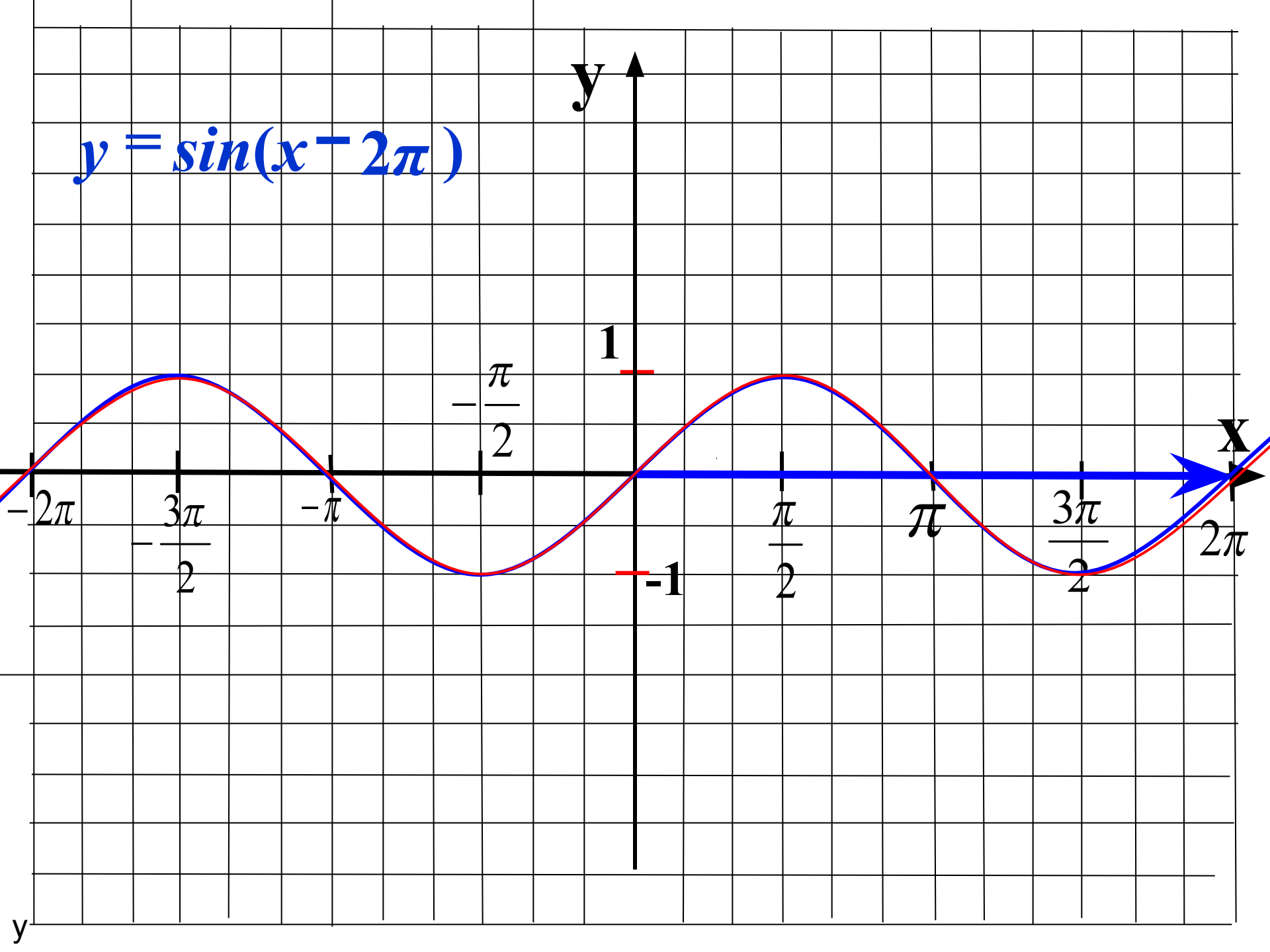
$y = \sin x - 1$

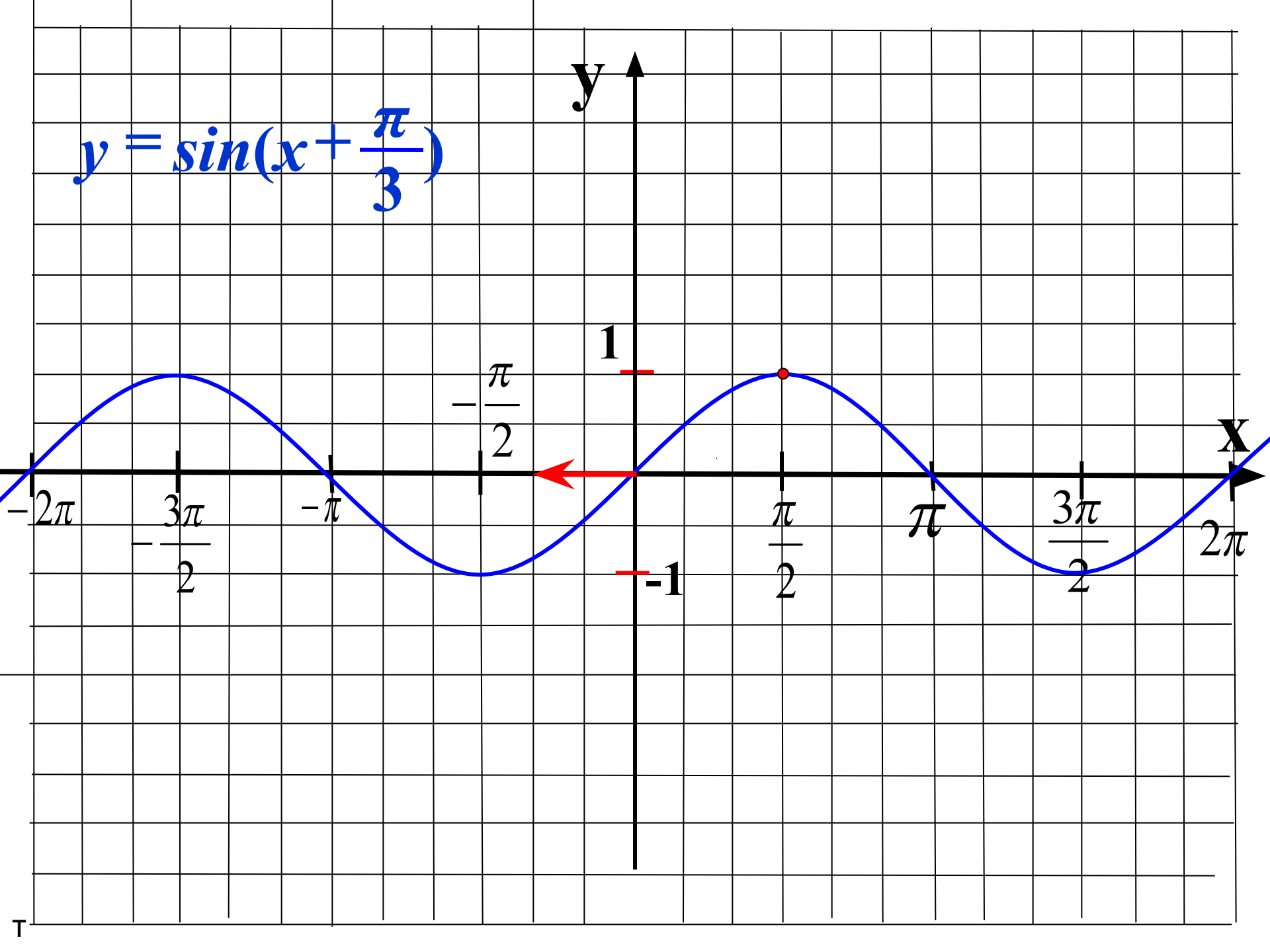


$E(y): y \in [-2;0]$

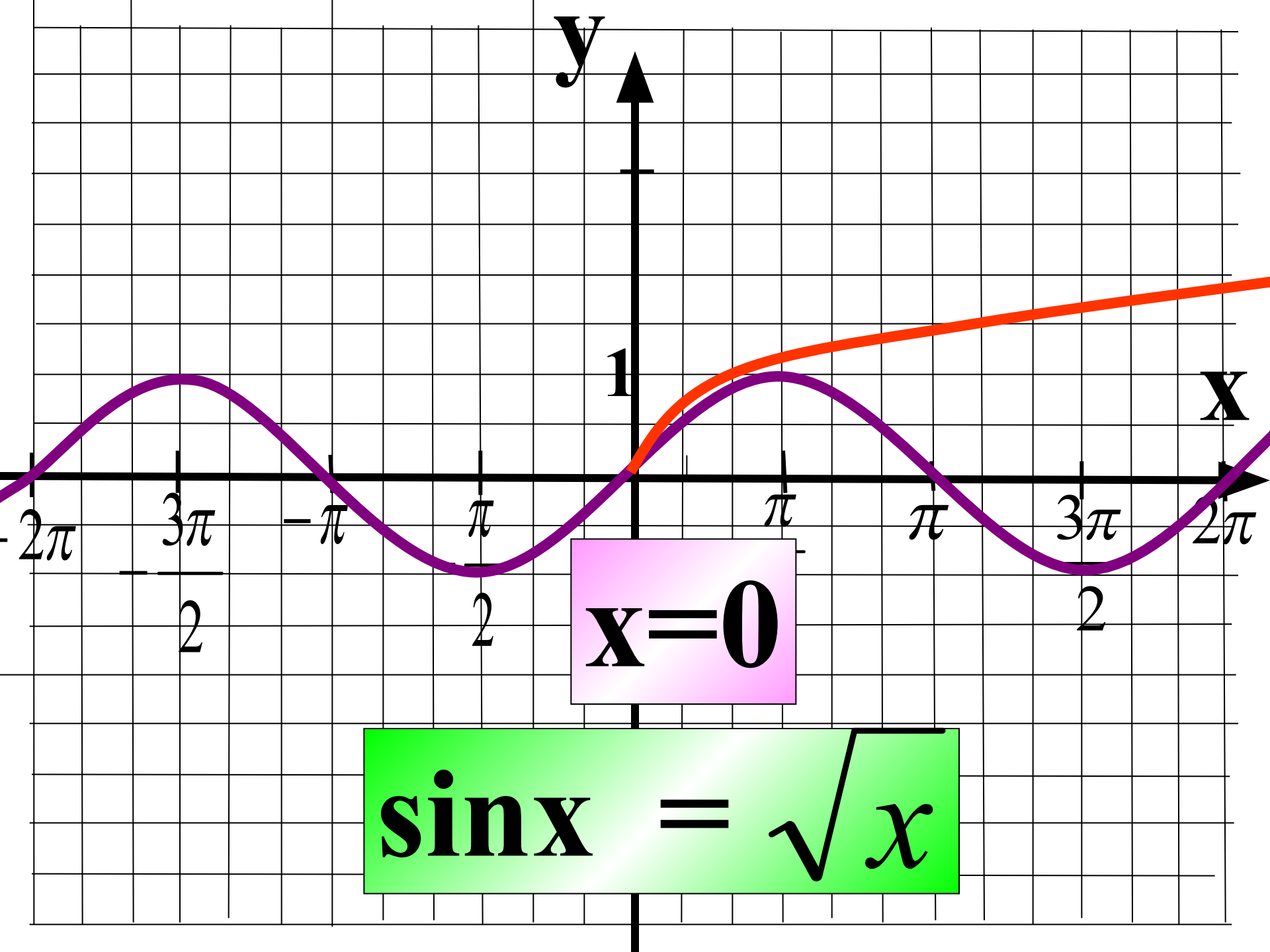

y
$y = \sin(x - \frac{2\pi}{3}) + 1$
1
x
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
$E(y): y \in [0;2]$

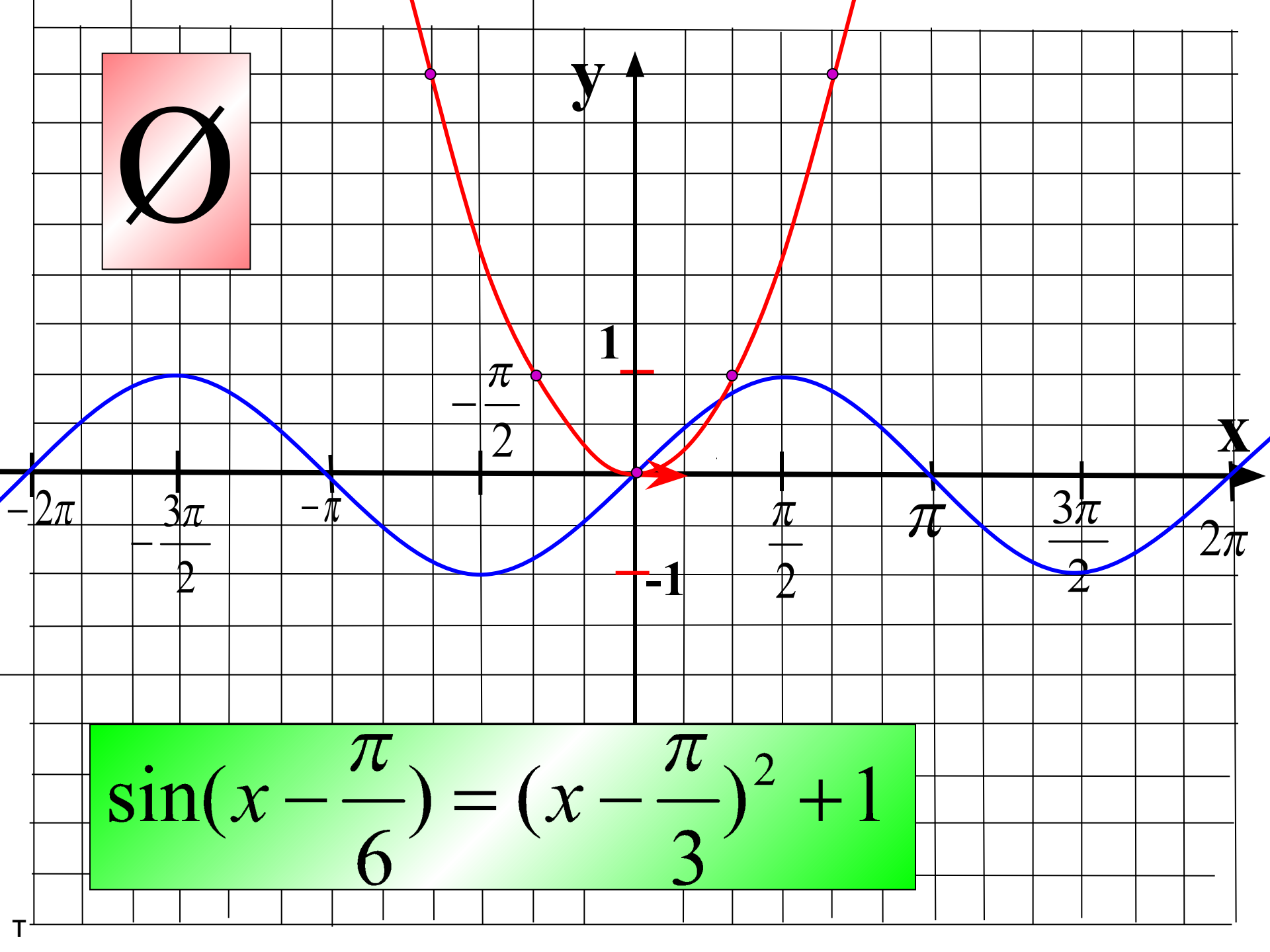

$y = \sin(x - \pi)$
y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π

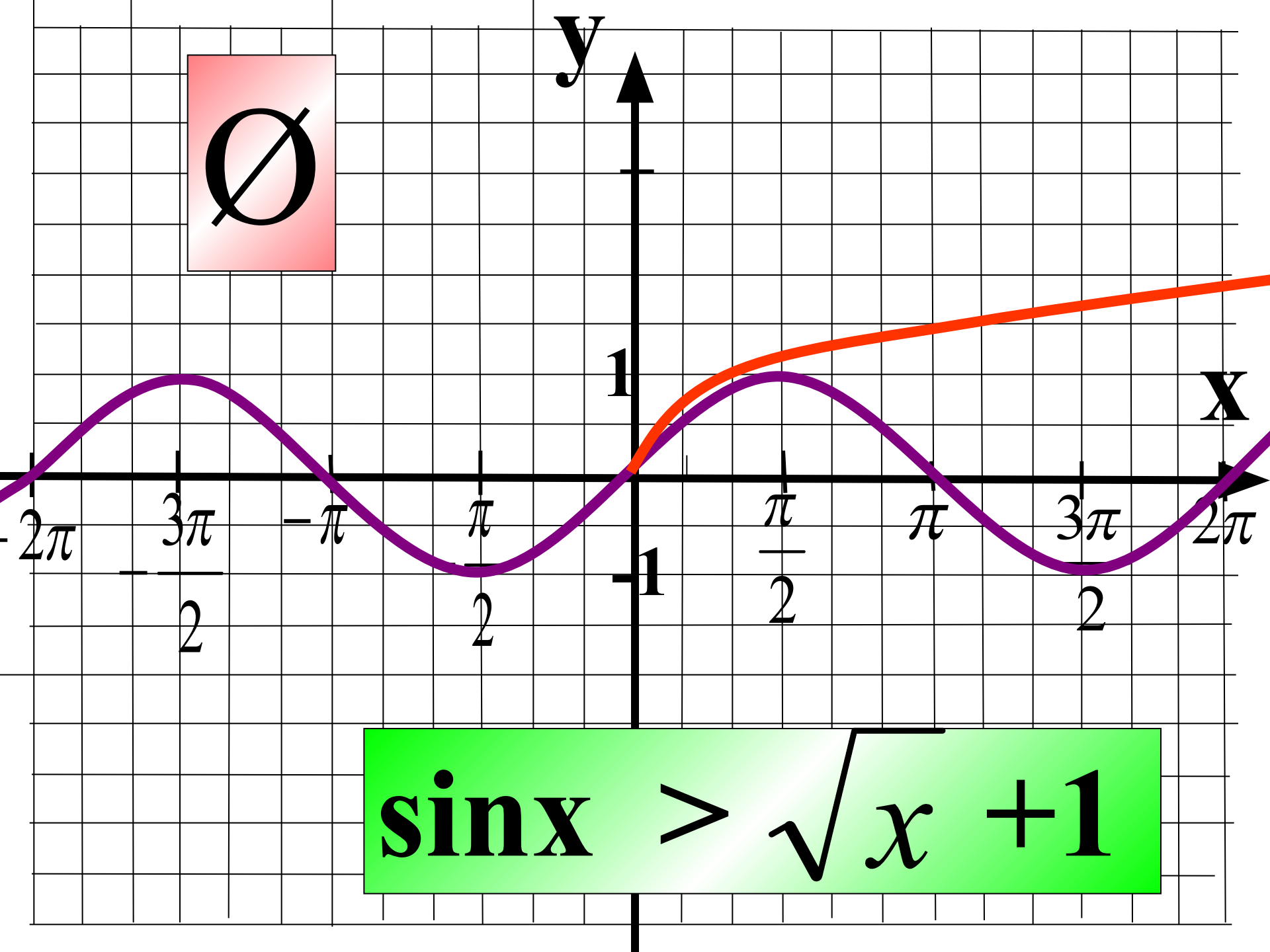

$y = \sin(x - 2\pi)$
y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π

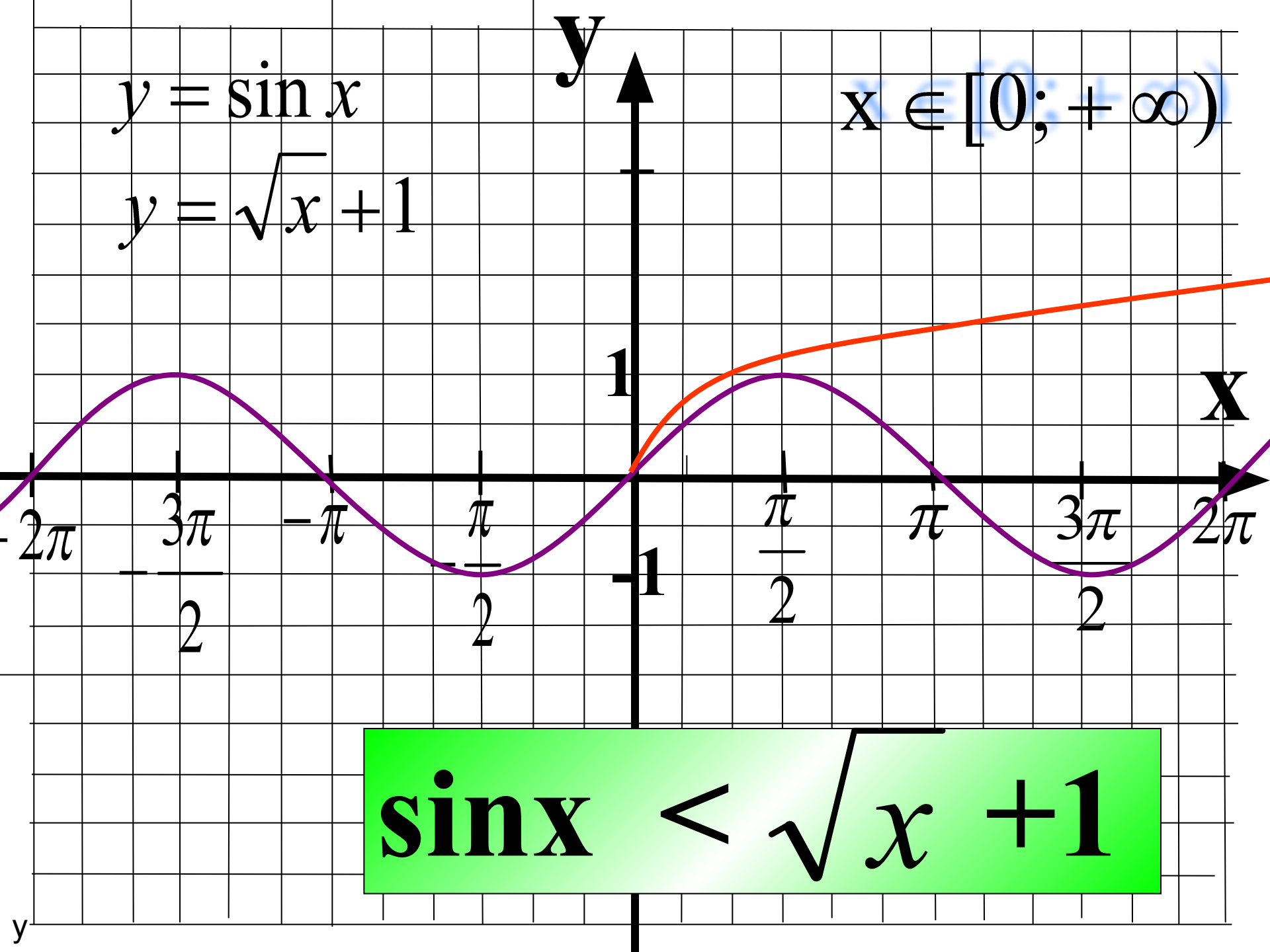

$y = \sin(x + \frac{\pi}{3})$
y
x
1
-1
$-\frac{\pi}{2}$
-2π
$-\frac{3\pi}{2}$
$-\pi$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π

Графический способ решения уравнений и неравенств.

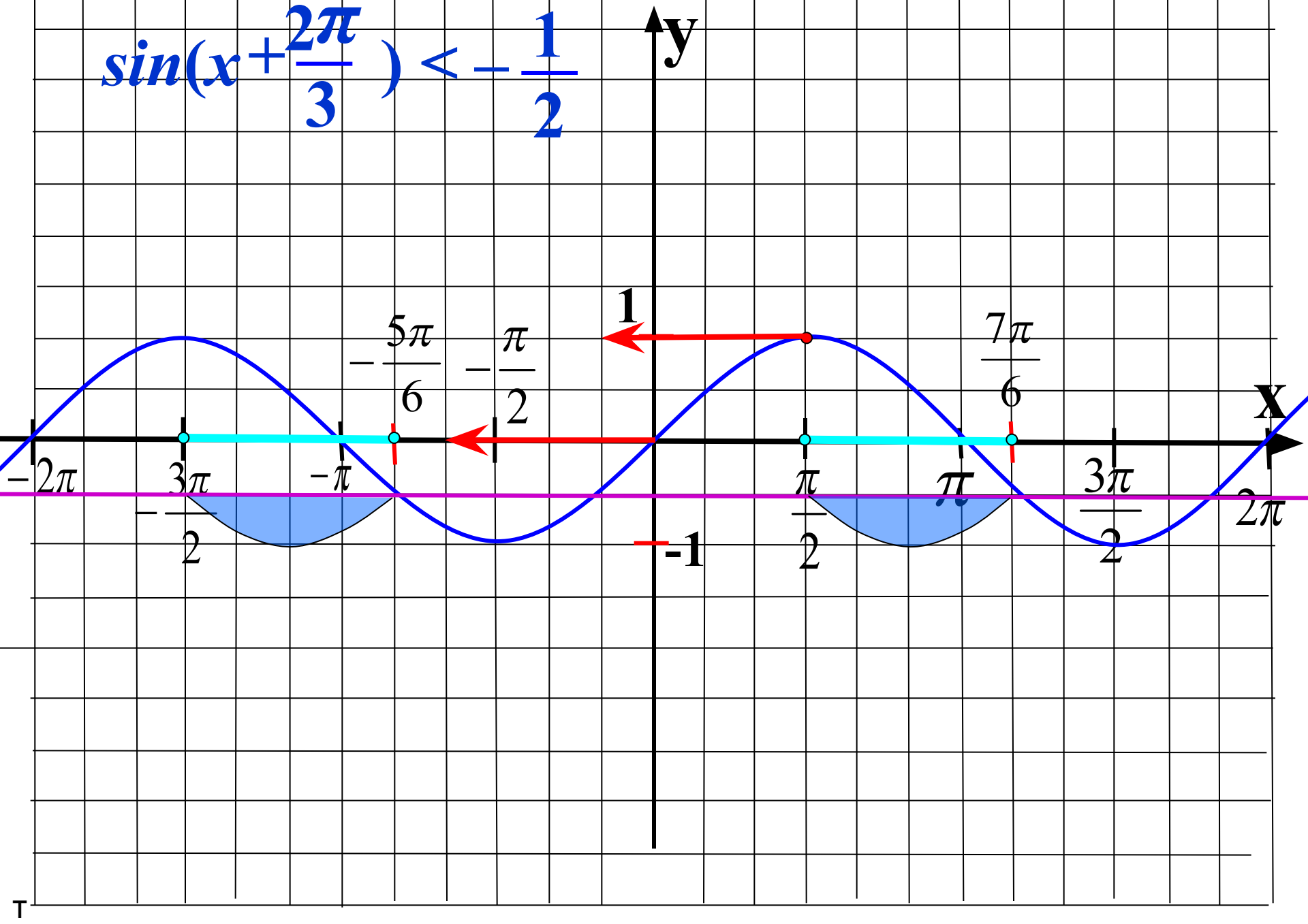

y
1
x
-2π
-3π/2
-π
-π/2
π/2
π
π
3π/2
2π
x=0
sinx = √x


Ø
y
x
1
-1
$-\frac{\pi}{2}$
-2π
$-\frac{3\pi}{2}$
$-\pi$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
$\sin(x-\frac{\pi}{6})=(x-\frac{\pi}{3})^2+1$

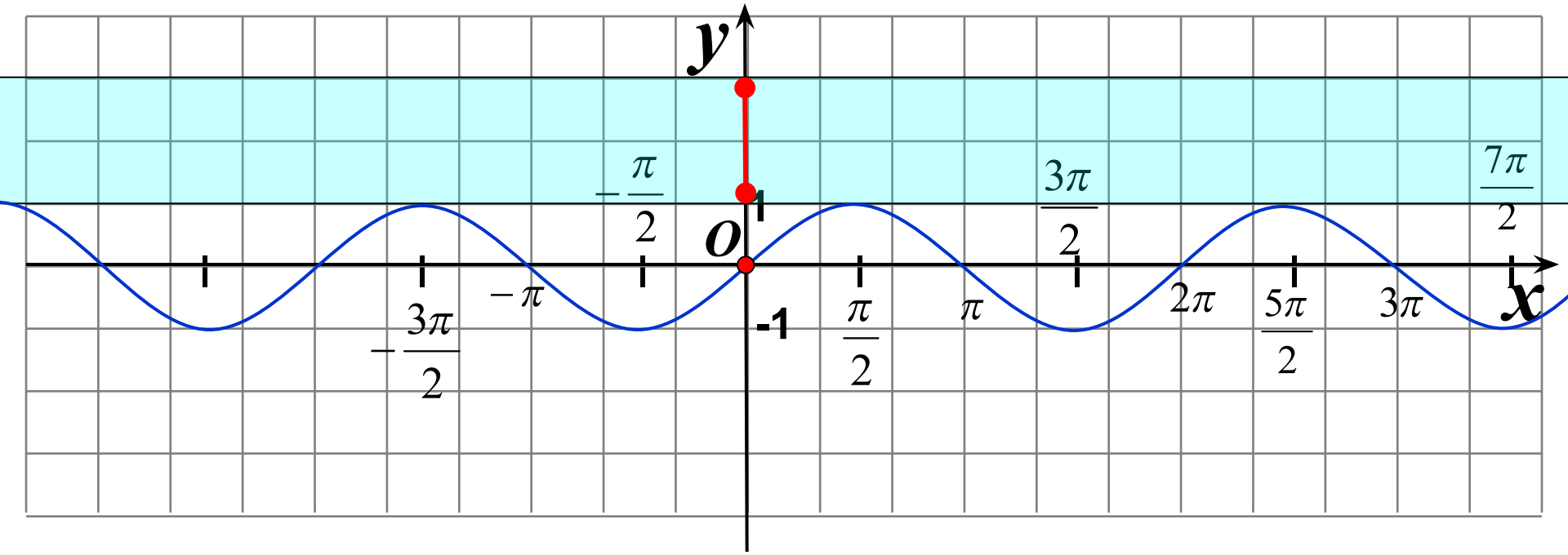

y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
$\sin x > \sqrt{x} + 1$


$y = \sin x$
$y = \sqrt{x} + 1$
$x \in [0; +\infty)$
y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π
$\sin x < \sqrt{x} + 1$

$$\sin\left(x+\frac{2\pi}{3}\right)<-\frac{1}{2}$$



T



Найти область значений функции $y = \sin\left(x - \frac{3\pi}{2}\right) + 2$

Единичный отрезок – 1 клетка.

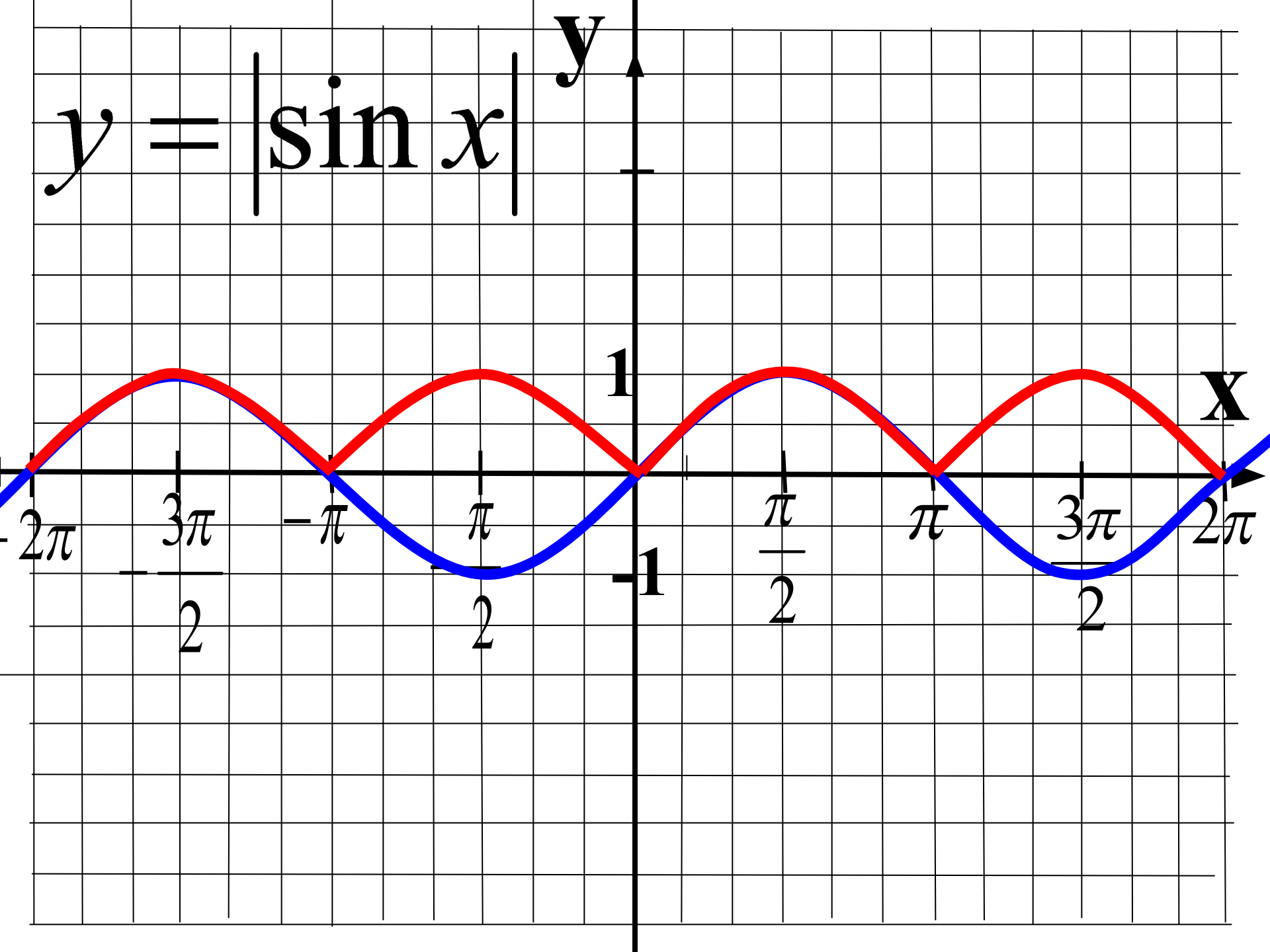
$$E(y): y \in [1;3]$$

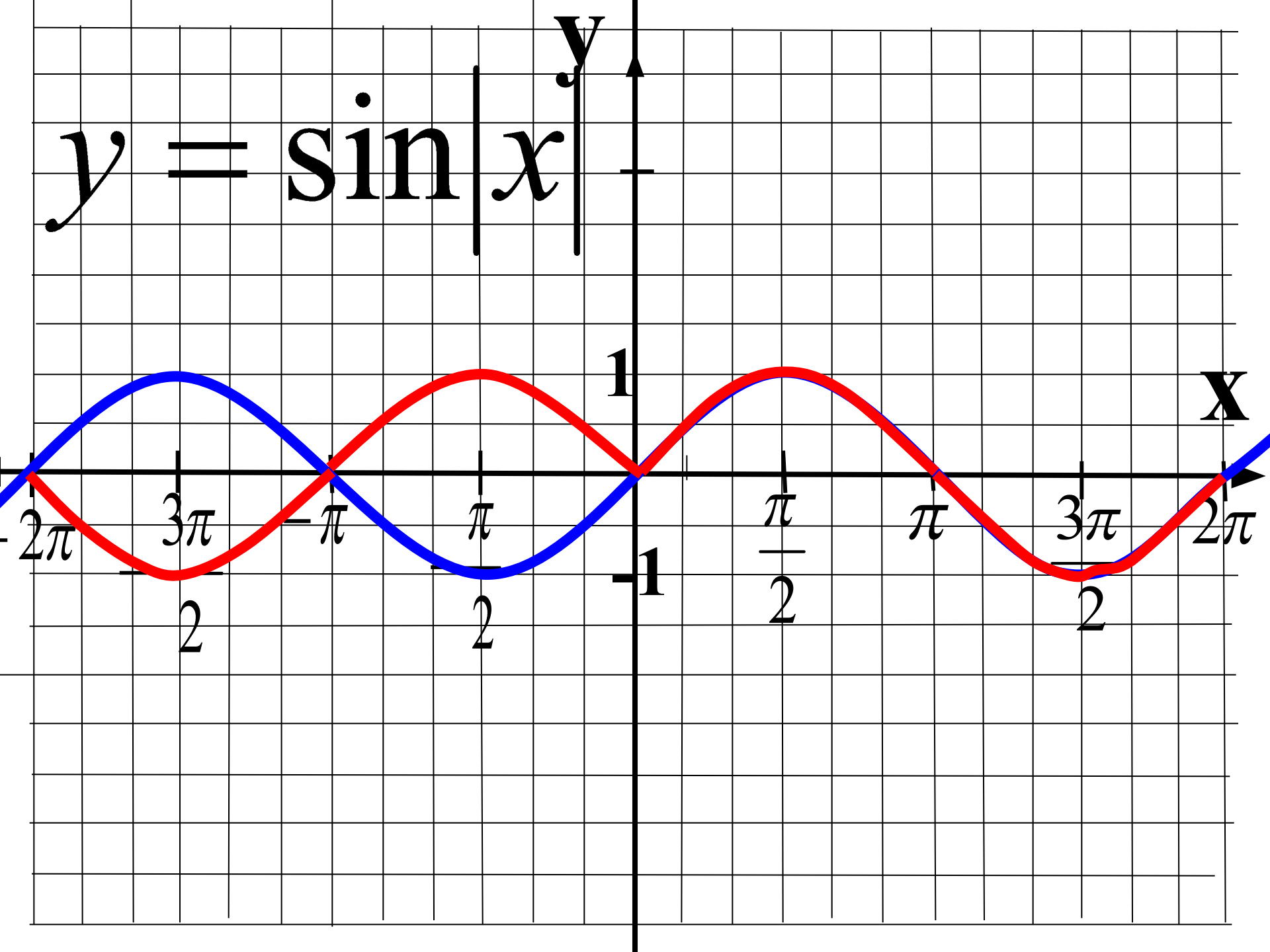
Умение строить графики нам нужны при …

- ✔ решении уравнений;
- ✔ решении неравенств;
- ✔ решении заданий, связанных с исследованием свойств функций.

Рассмотрим графики функций, аналитическая запись которых содержит знак абсолютной величины.

$y = |\sin x|$




$y = \sin|x|$
y
x
1
-1
-2π
$-\frac{3\pi}{2}$
$-\pi$
$-\frac{\pi}{2}$
$\frac{\pi}{2}$
π
$\frac{3\pi}{2}$
2π