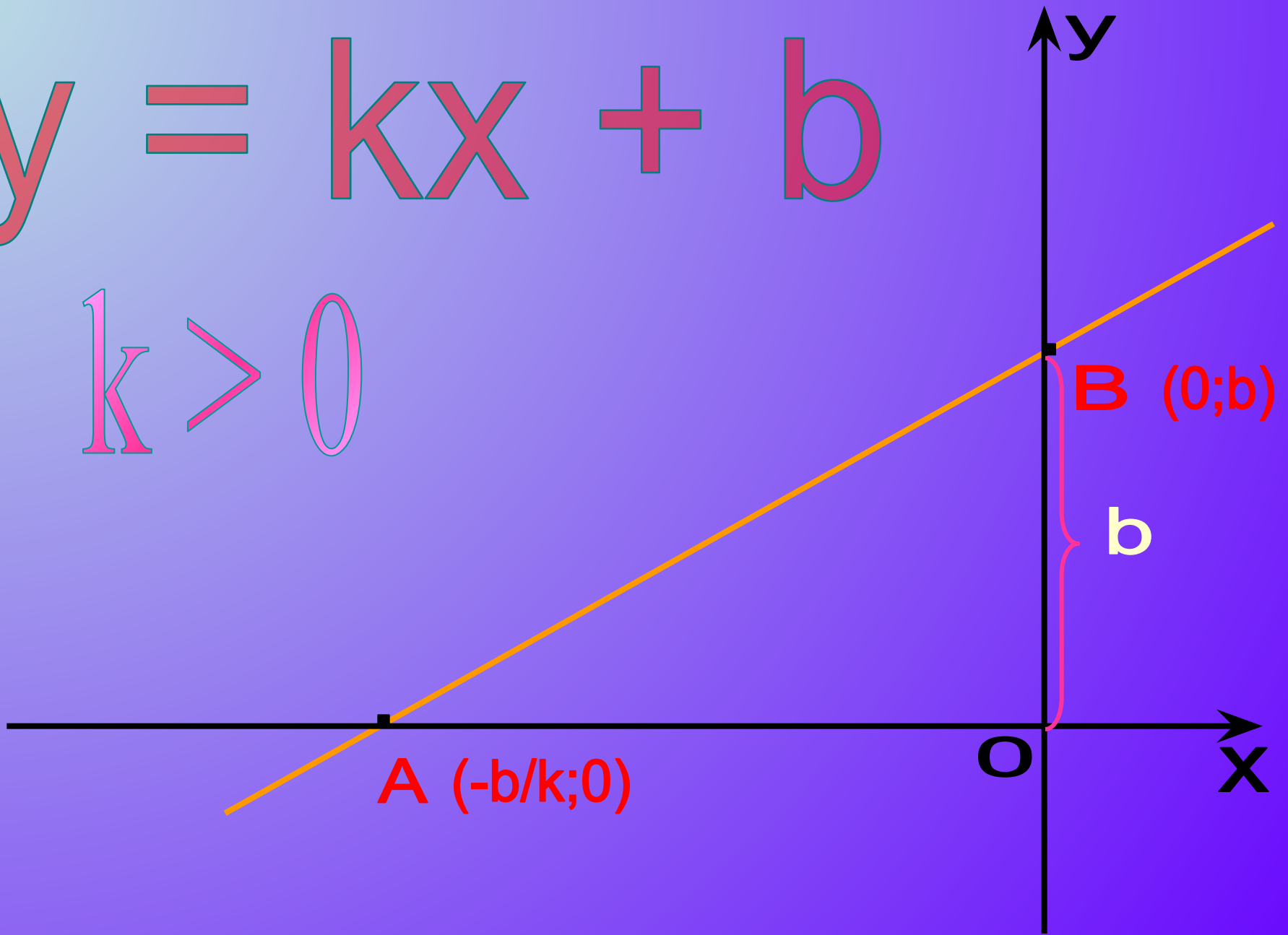


Простейшие элементарные функции и их графики



$$y = kx + b$$

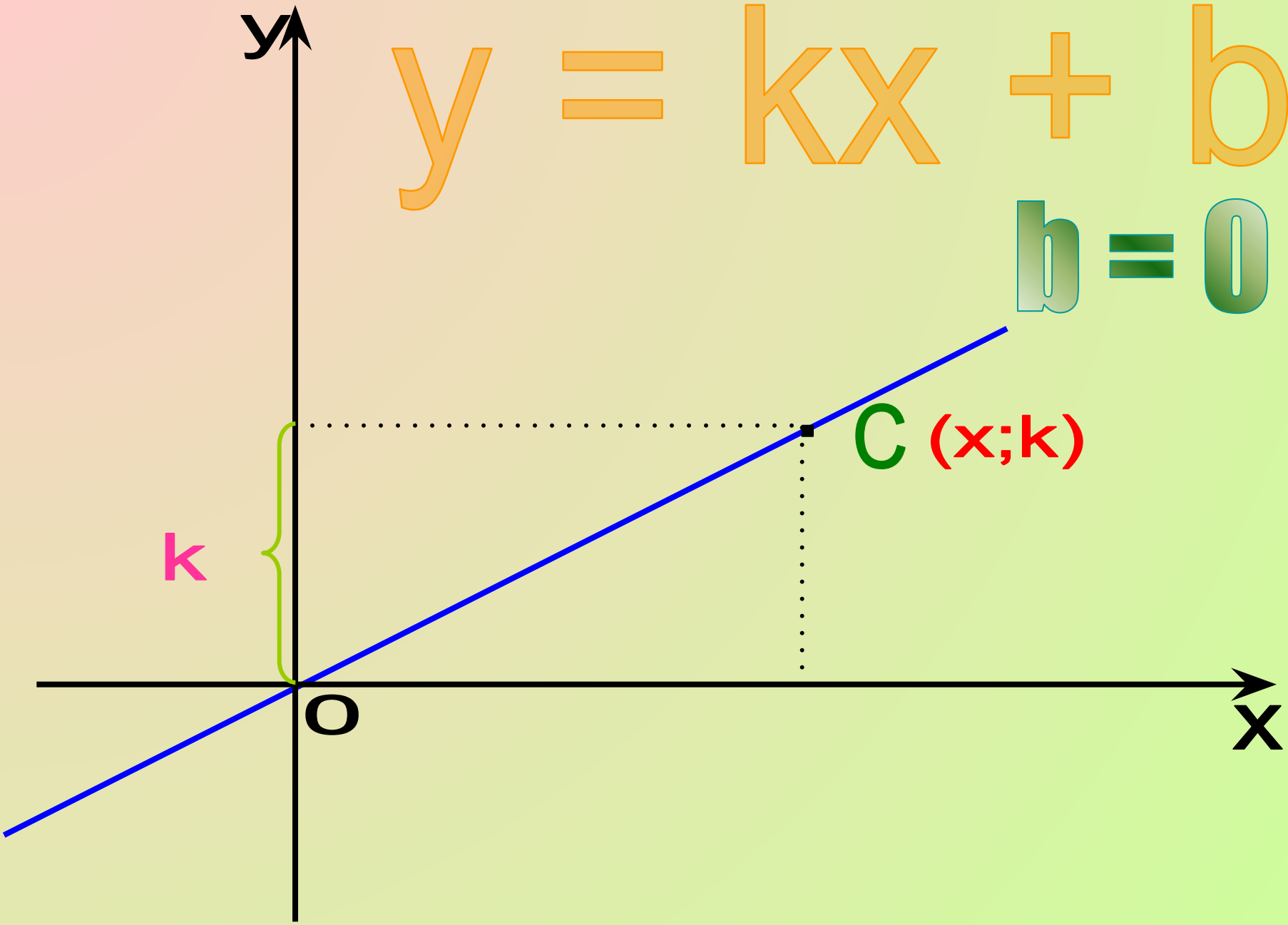
$$k > 0$$

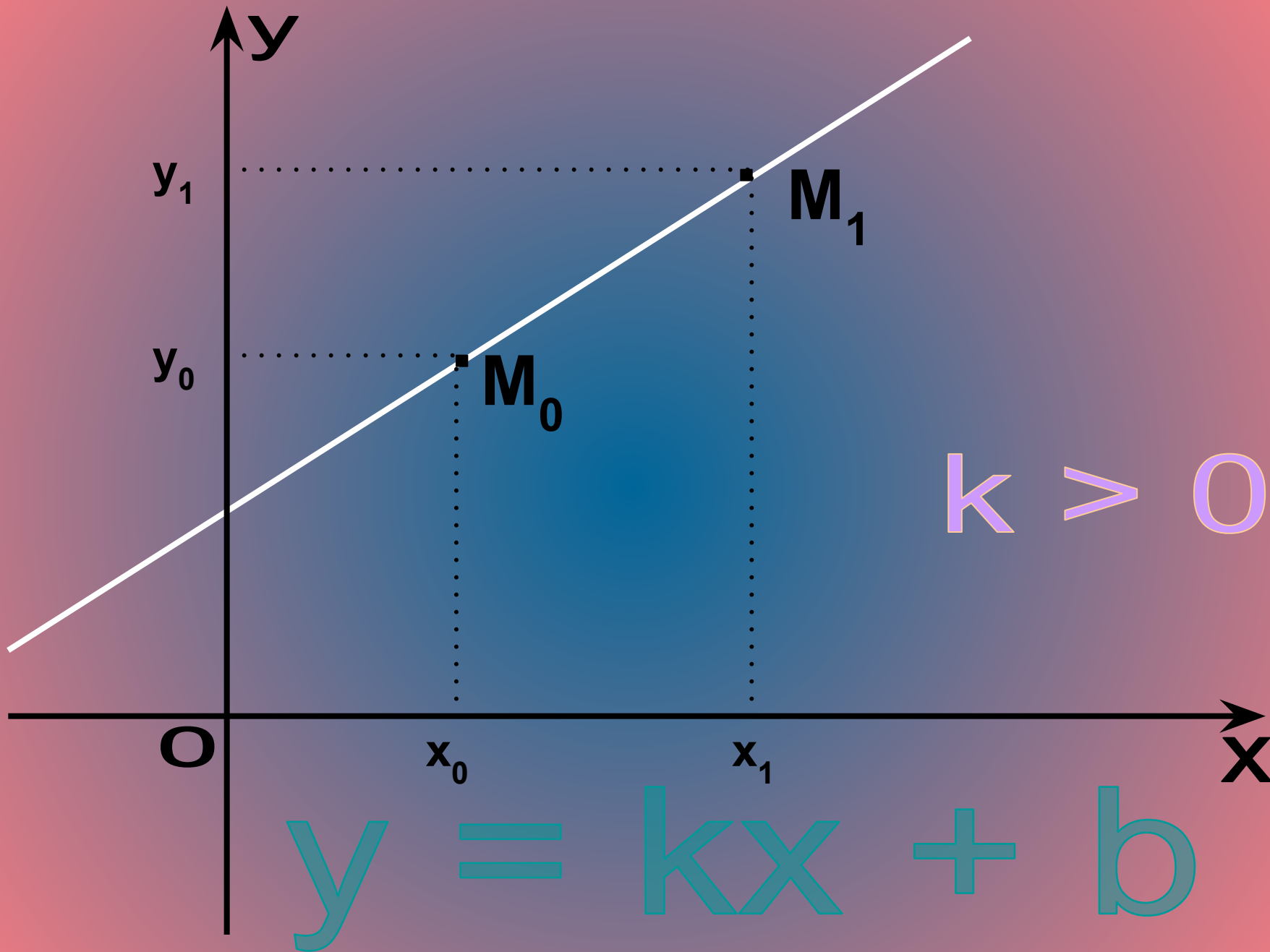


y

$$y = kx + b$$

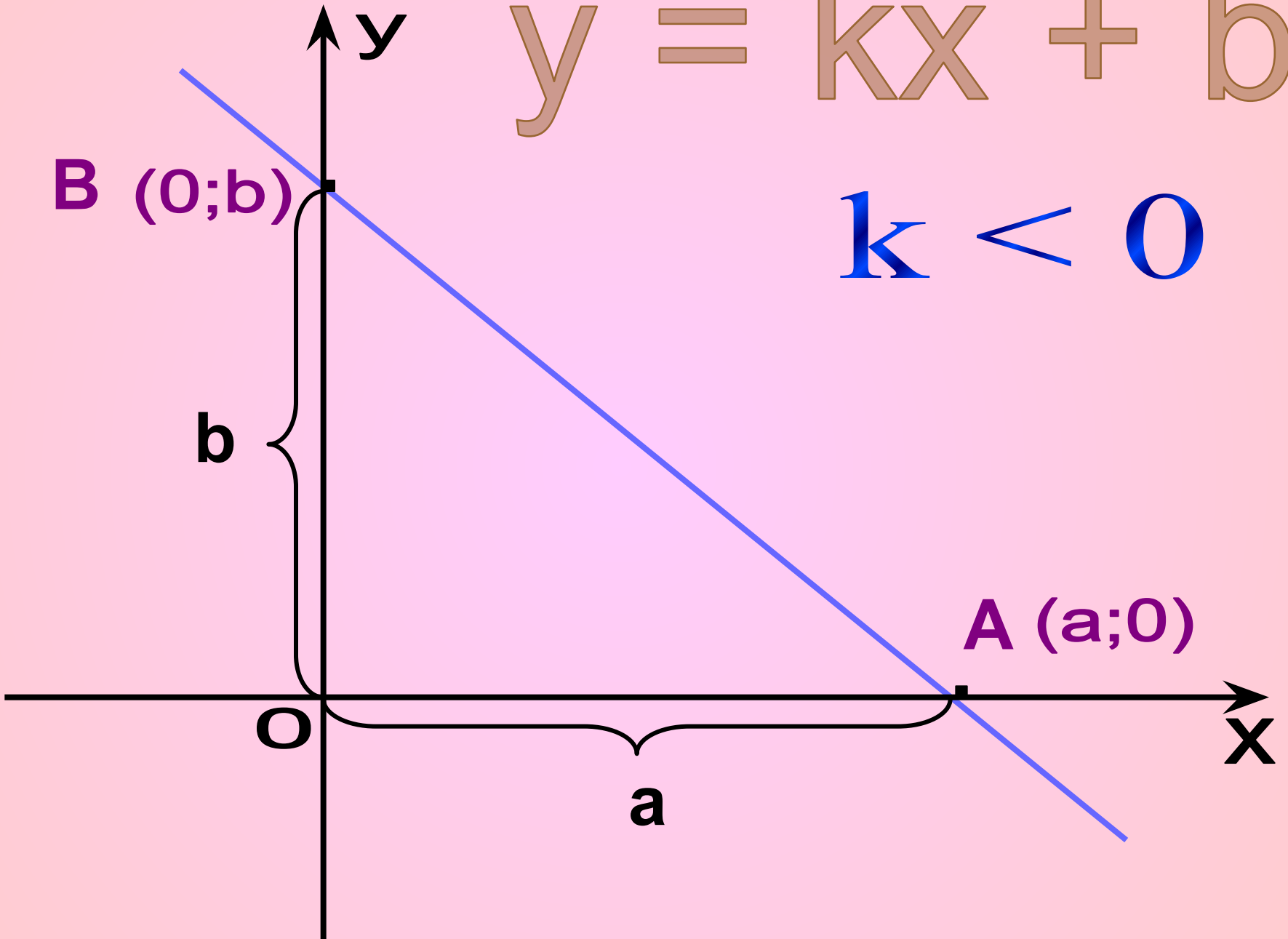
$$b = 0$$





$$y = kx + b$$

$$k < 0$$



$$y = ax^2 + bx + c$$

c

B (0;c)

A (-b/a;c)

O

c

a > 0



$$y = ax^2 + bx + c$$



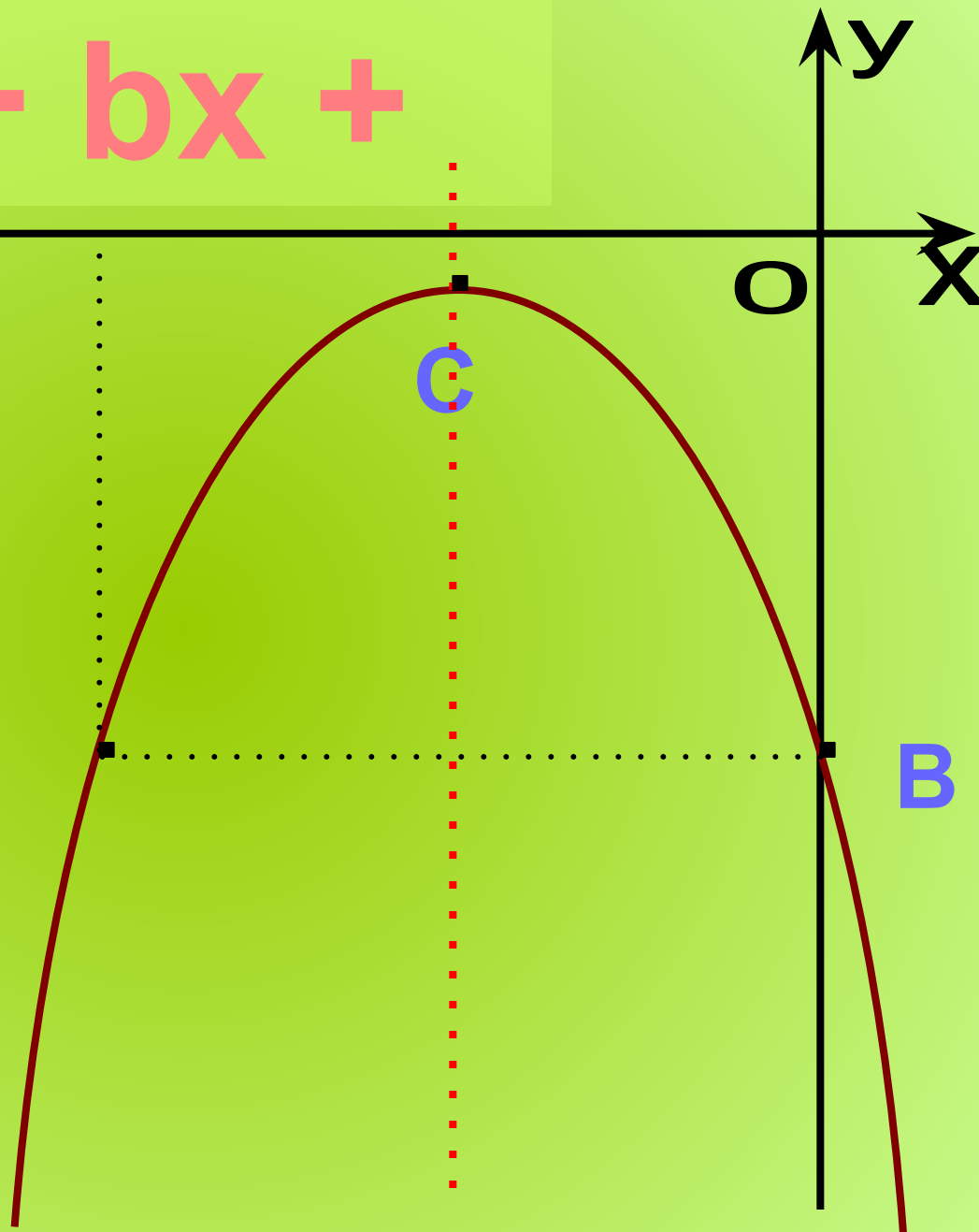
A

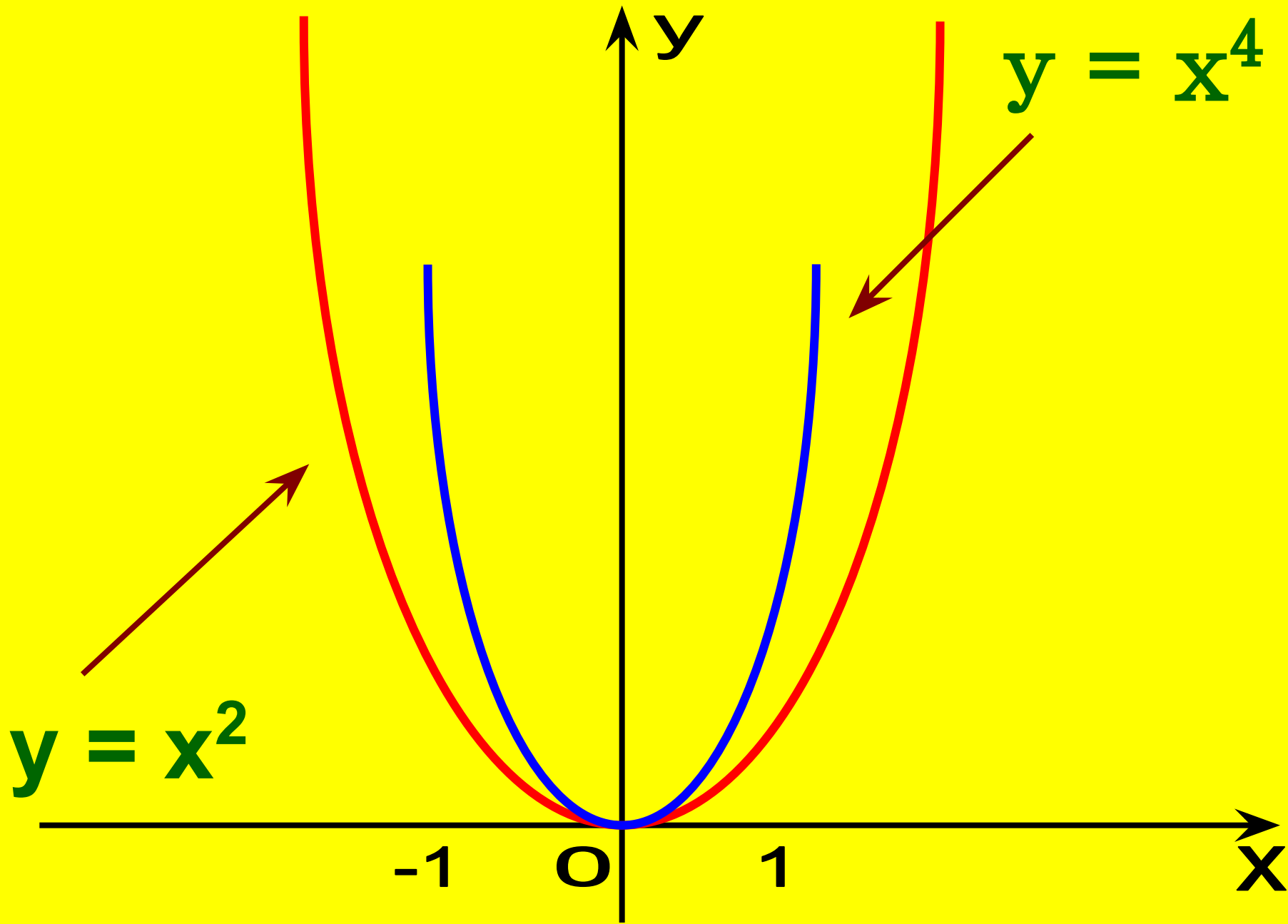
C

B

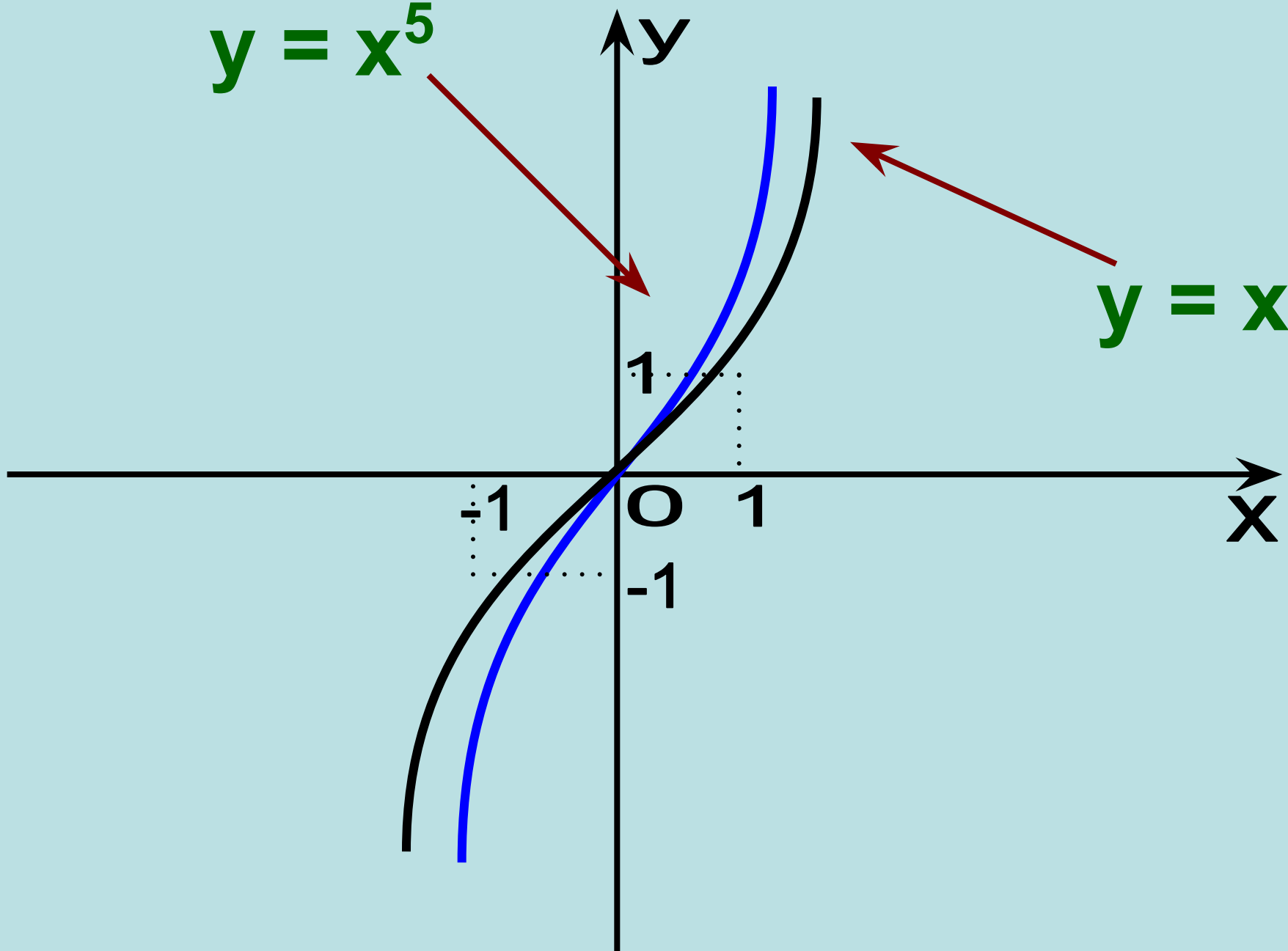
$$a < 0$$

$$D < 0$$





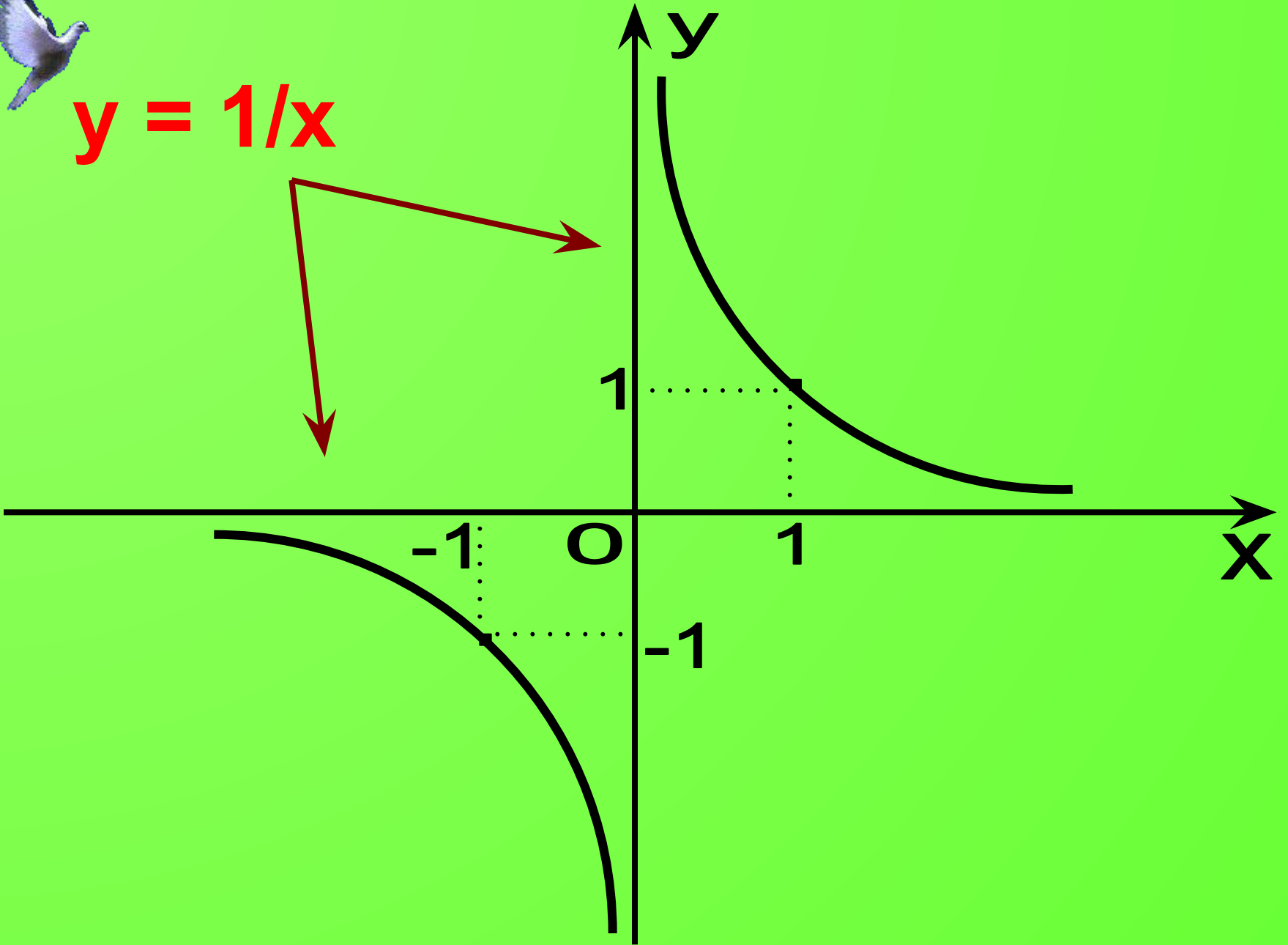
$$y = x^5$$



$$y = x^3$$

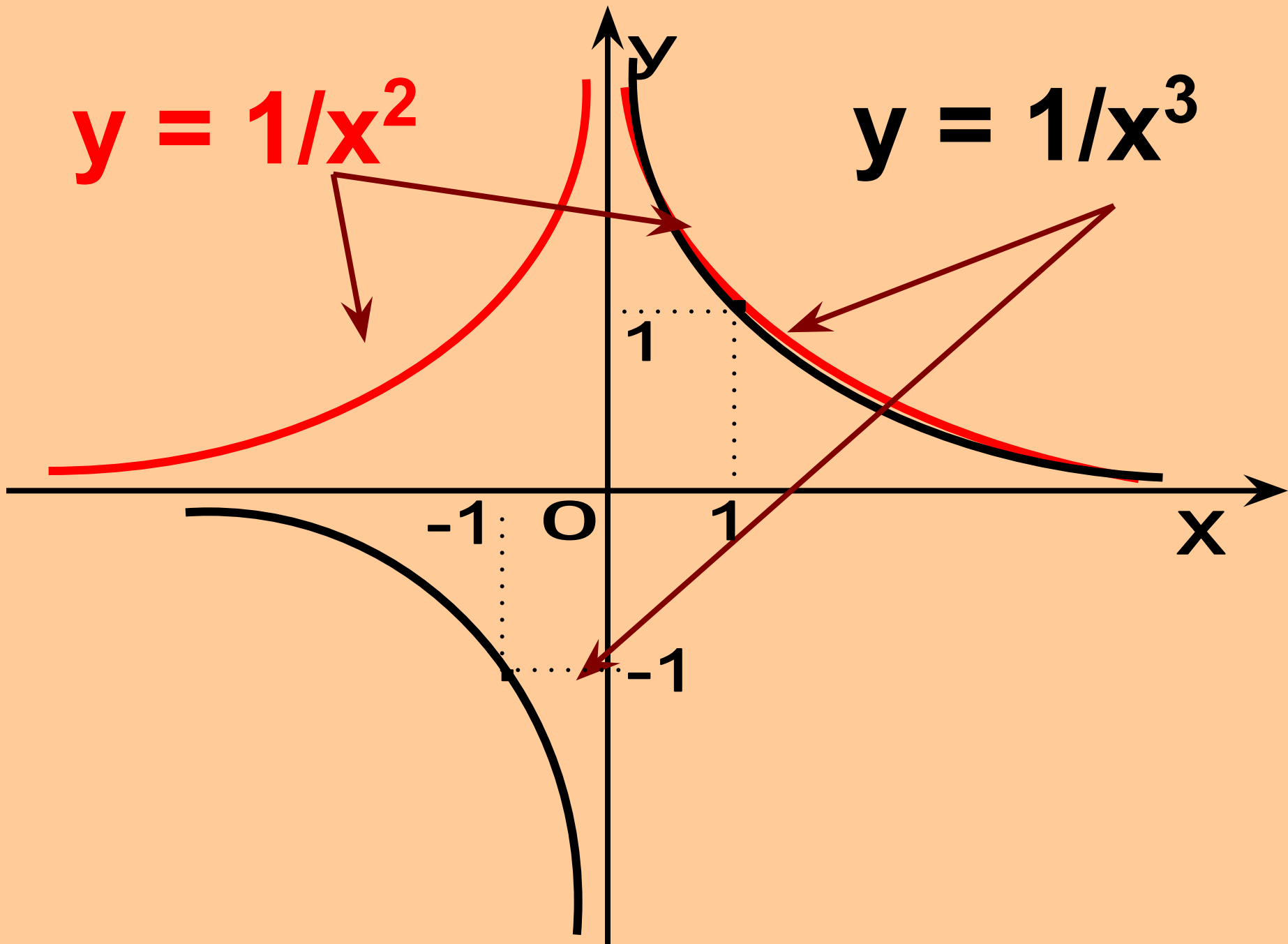


$$y = 1/x$$

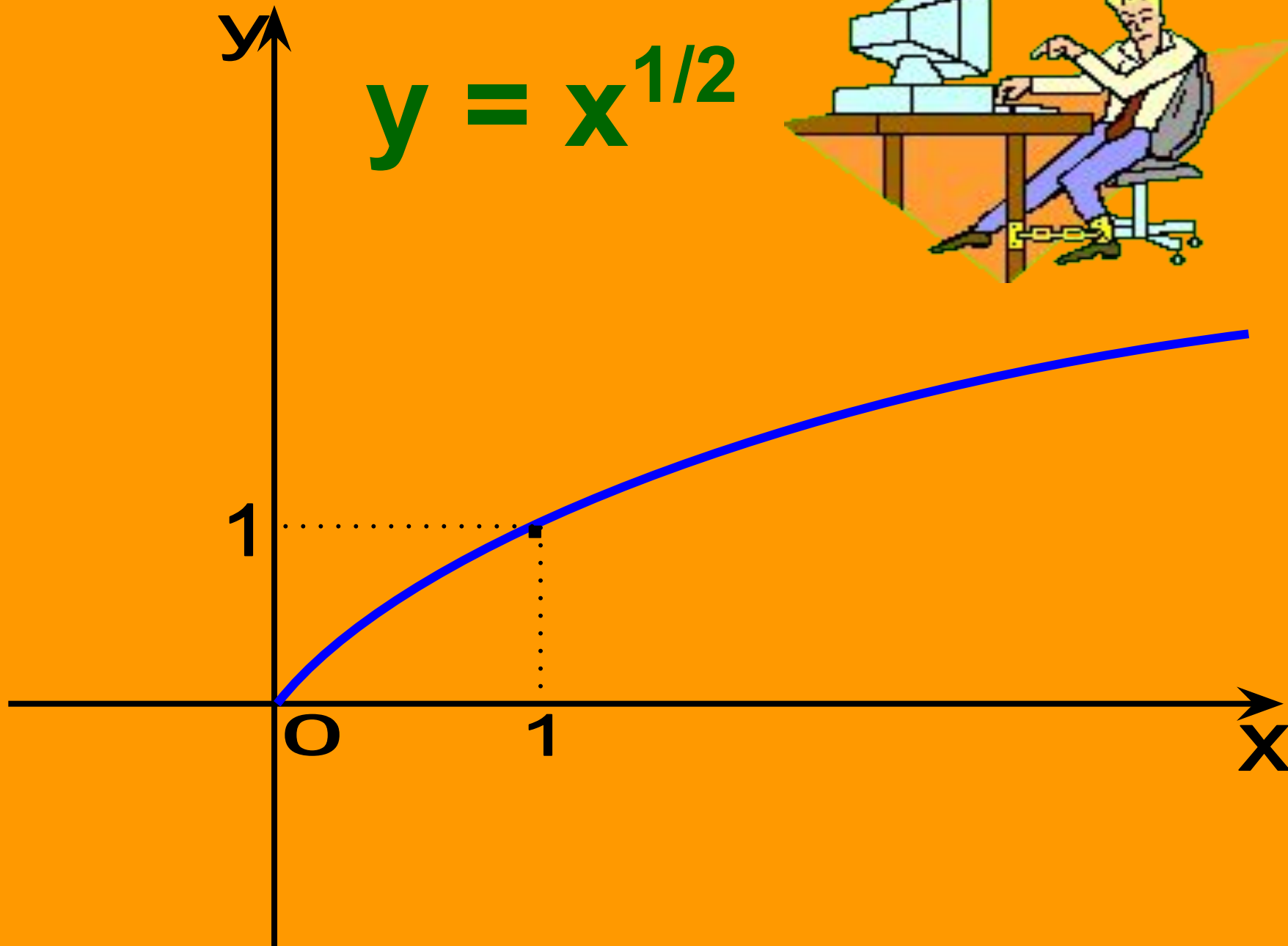


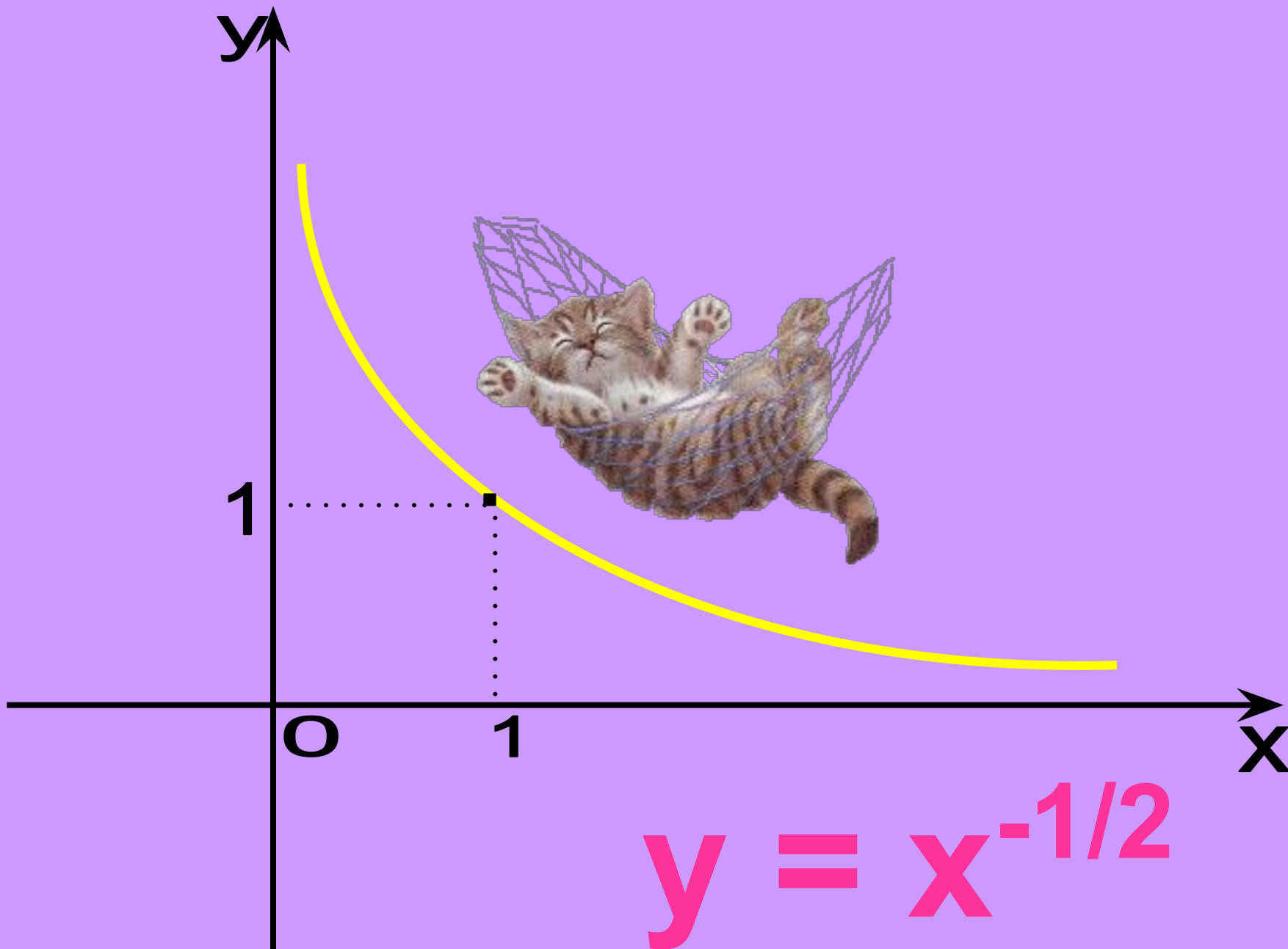
$$y = 1/x^2$$

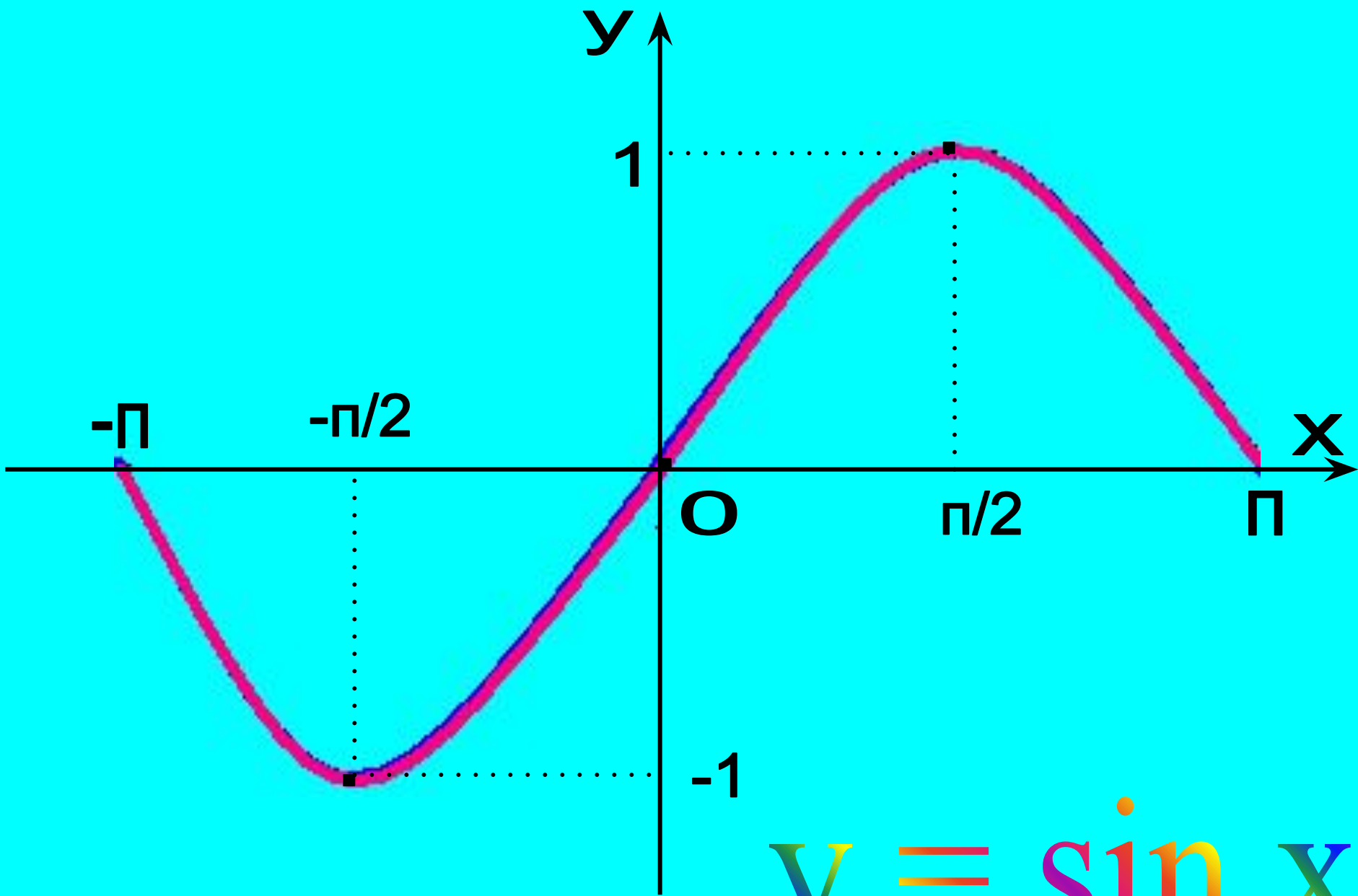
$$y = 1/x^3$$



$$y = x^{1/2}$$

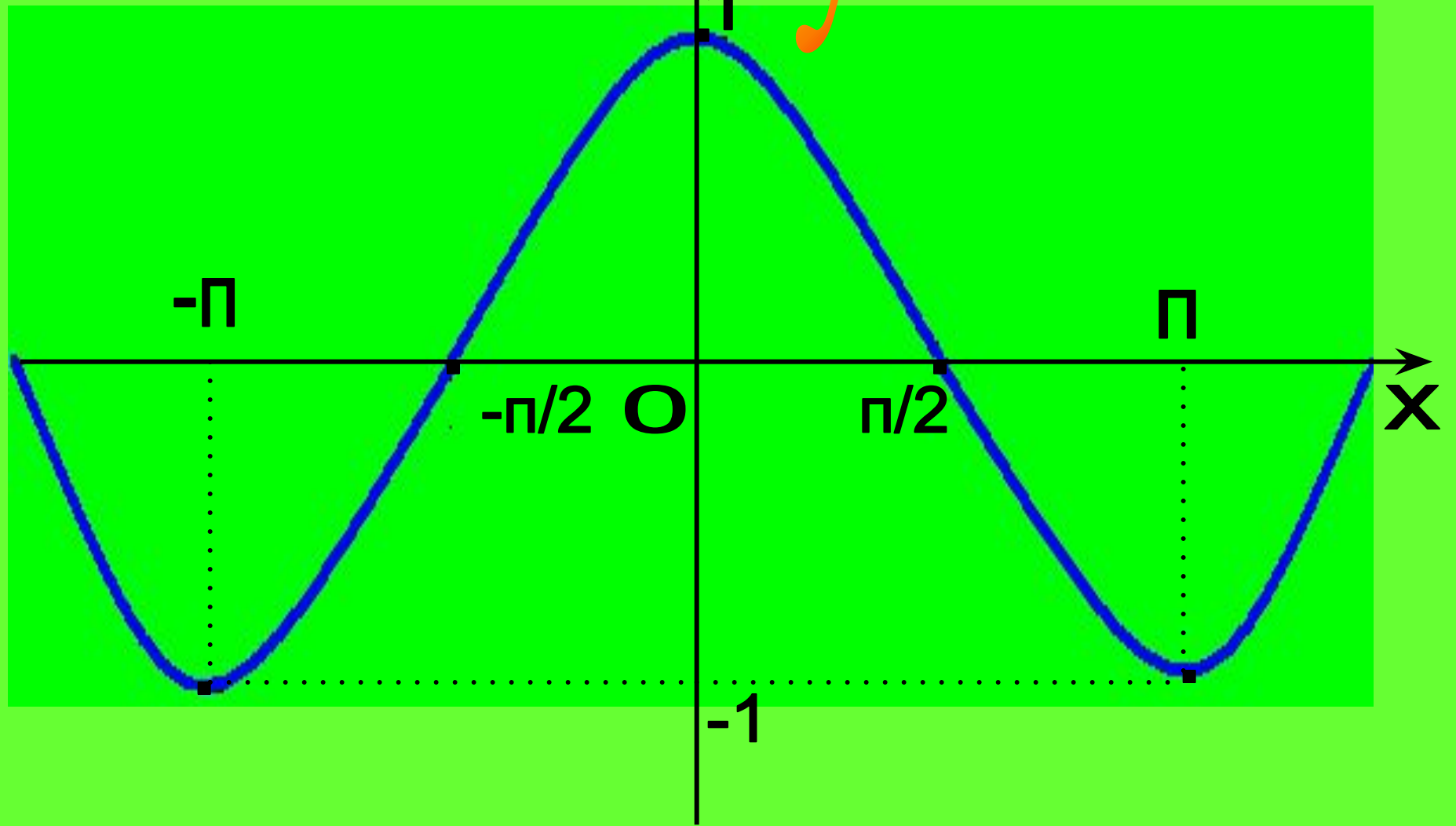


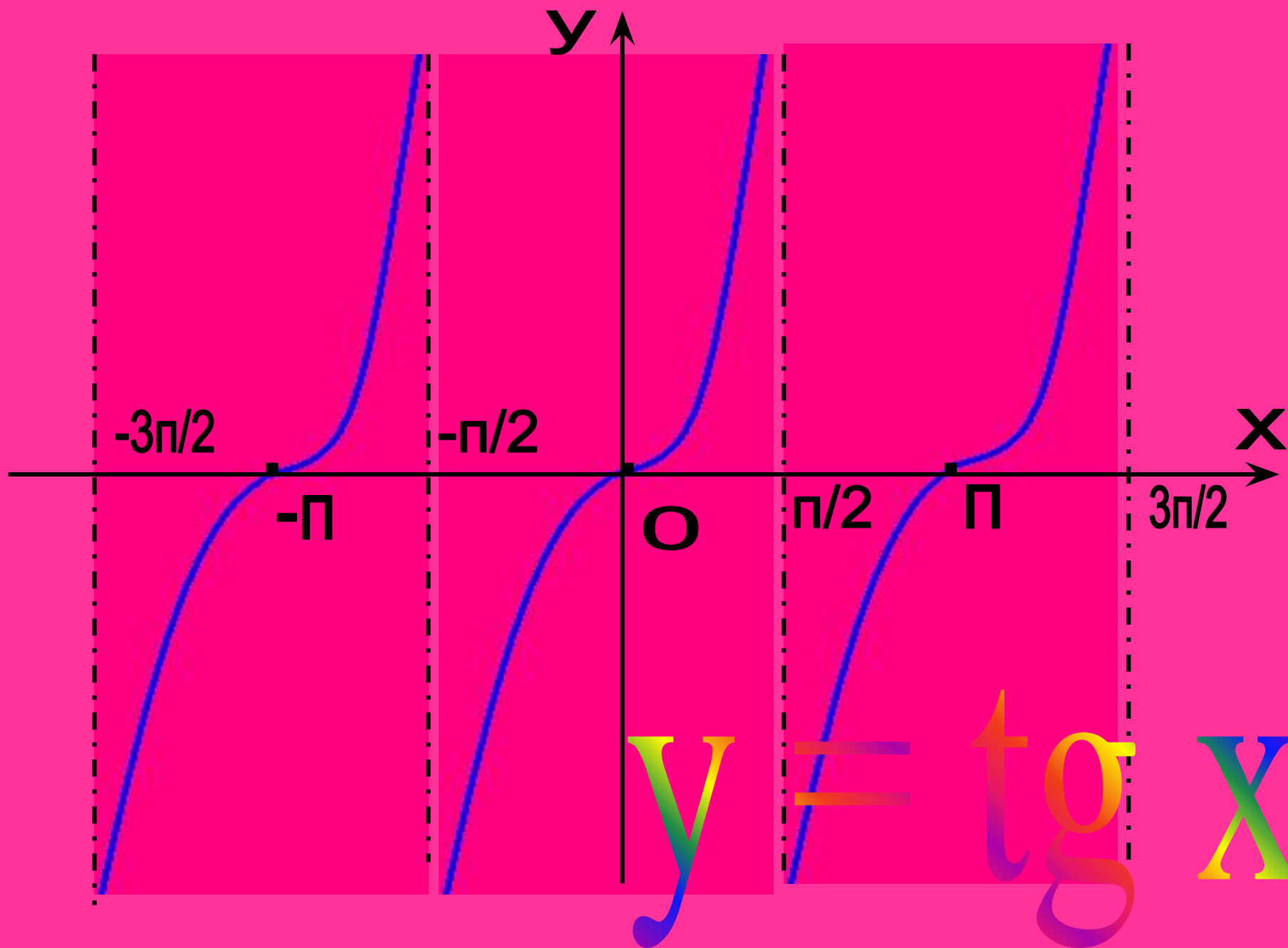




$$y = \sin x$$

$$y = \cos x$$





y

$$y = \operatorname{ctg} x$$

O

x

$-3\pi/2$

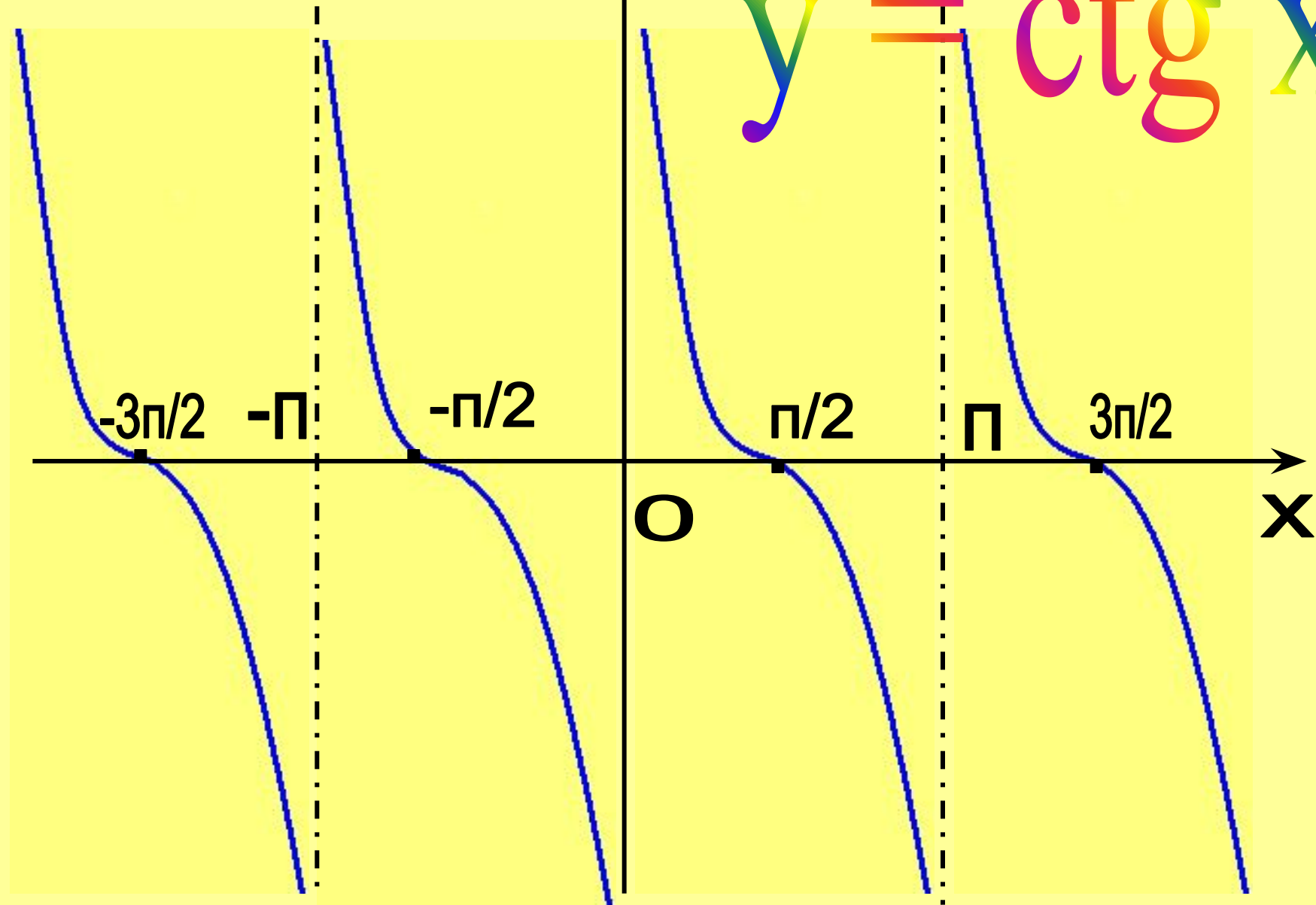
$-\pi$

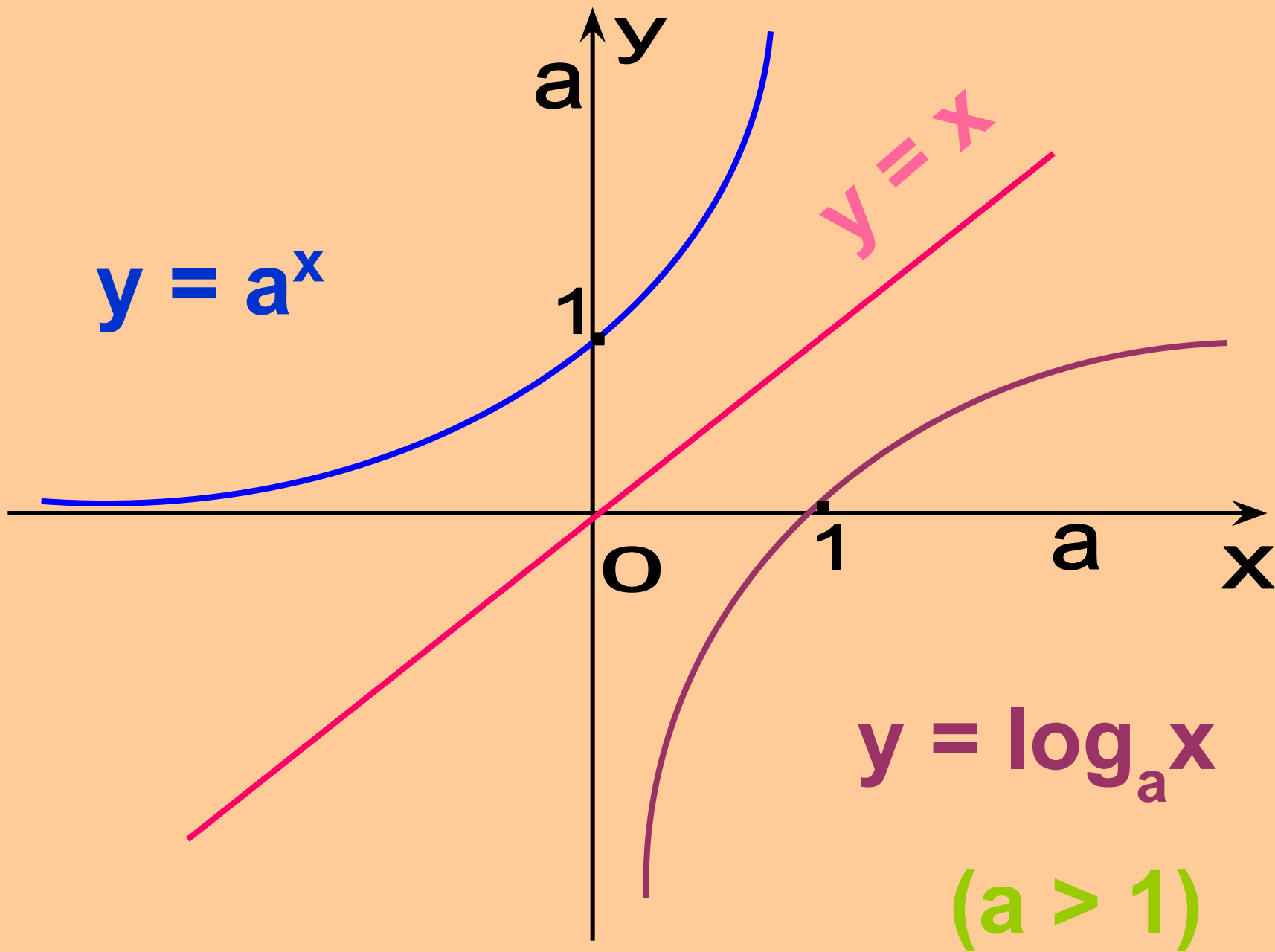
$-\pi/2$

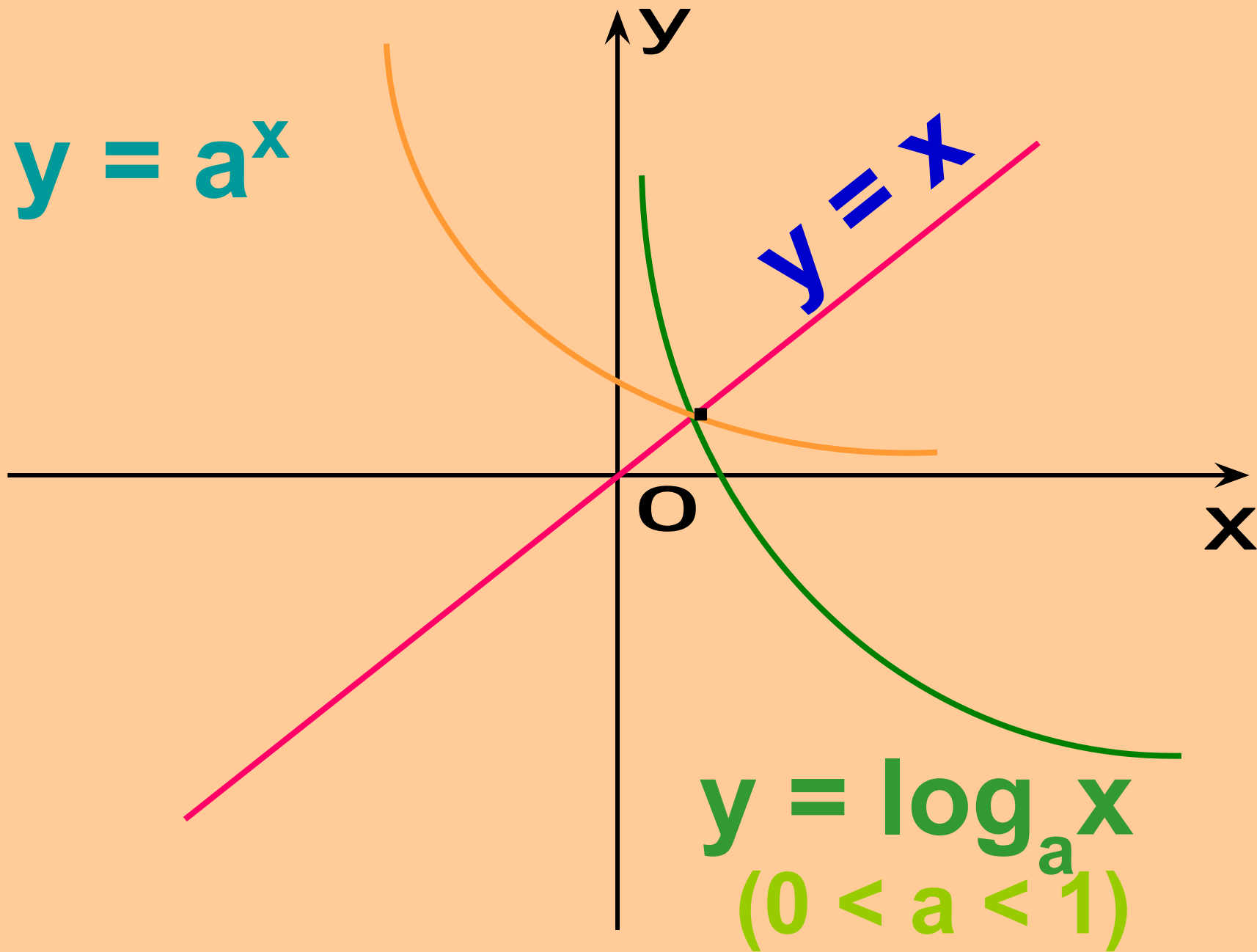
$\pi/2$

π

$3\pi/2$

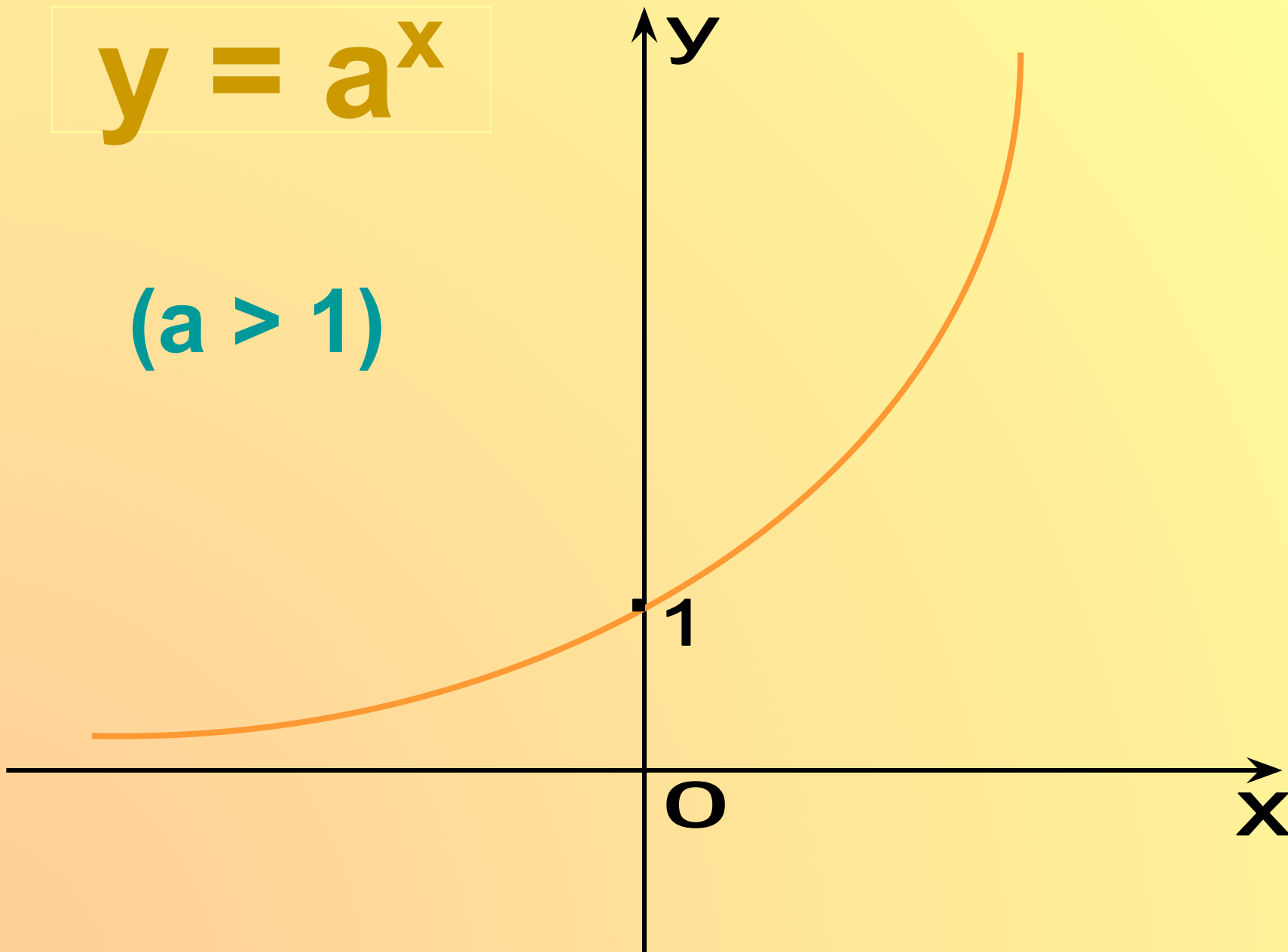






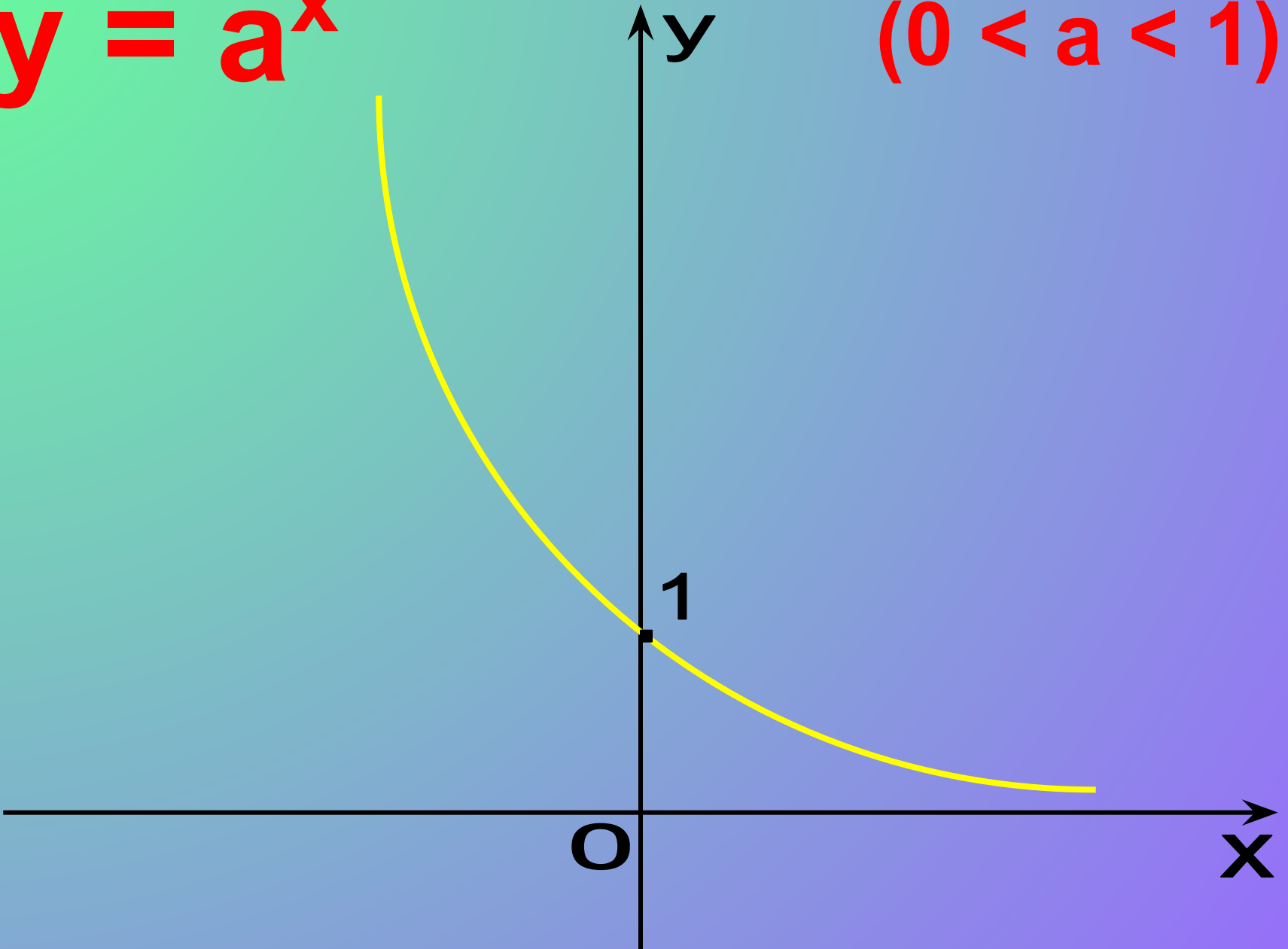
$$y = a^x$$

$(a > 1)$

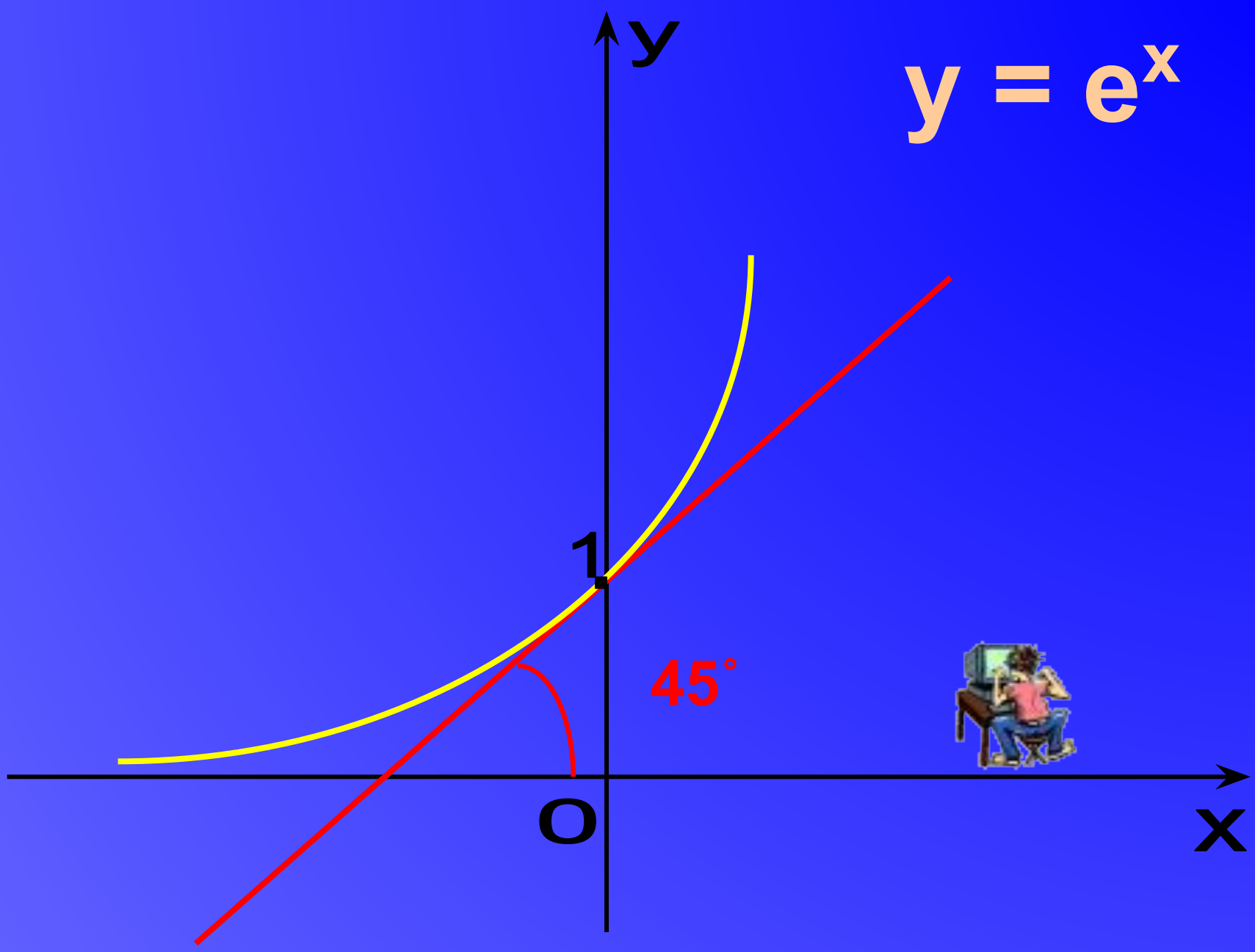


$$y = a^x$$

$$(0 < a < 1)$$

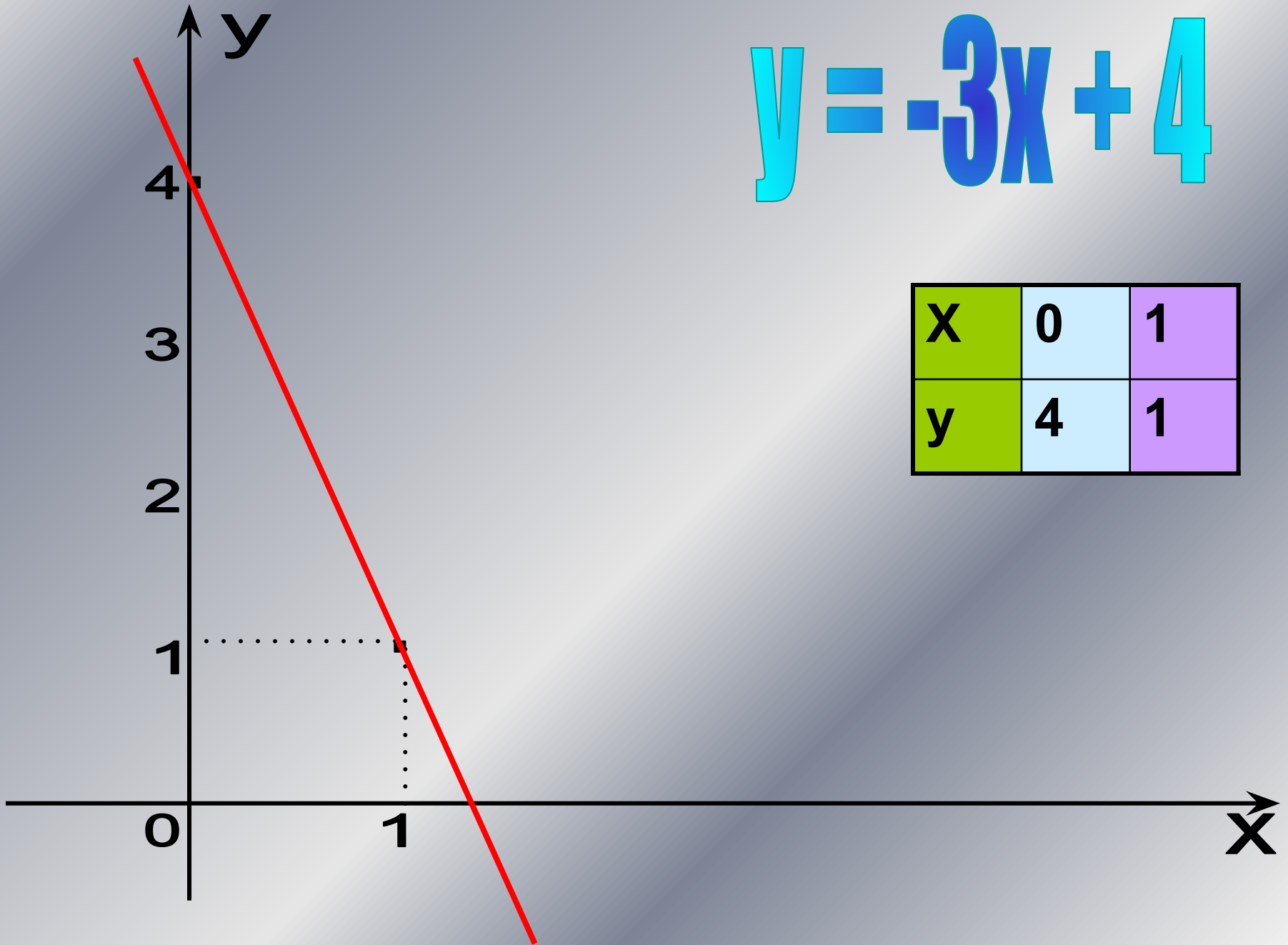


$$y = e^x$$

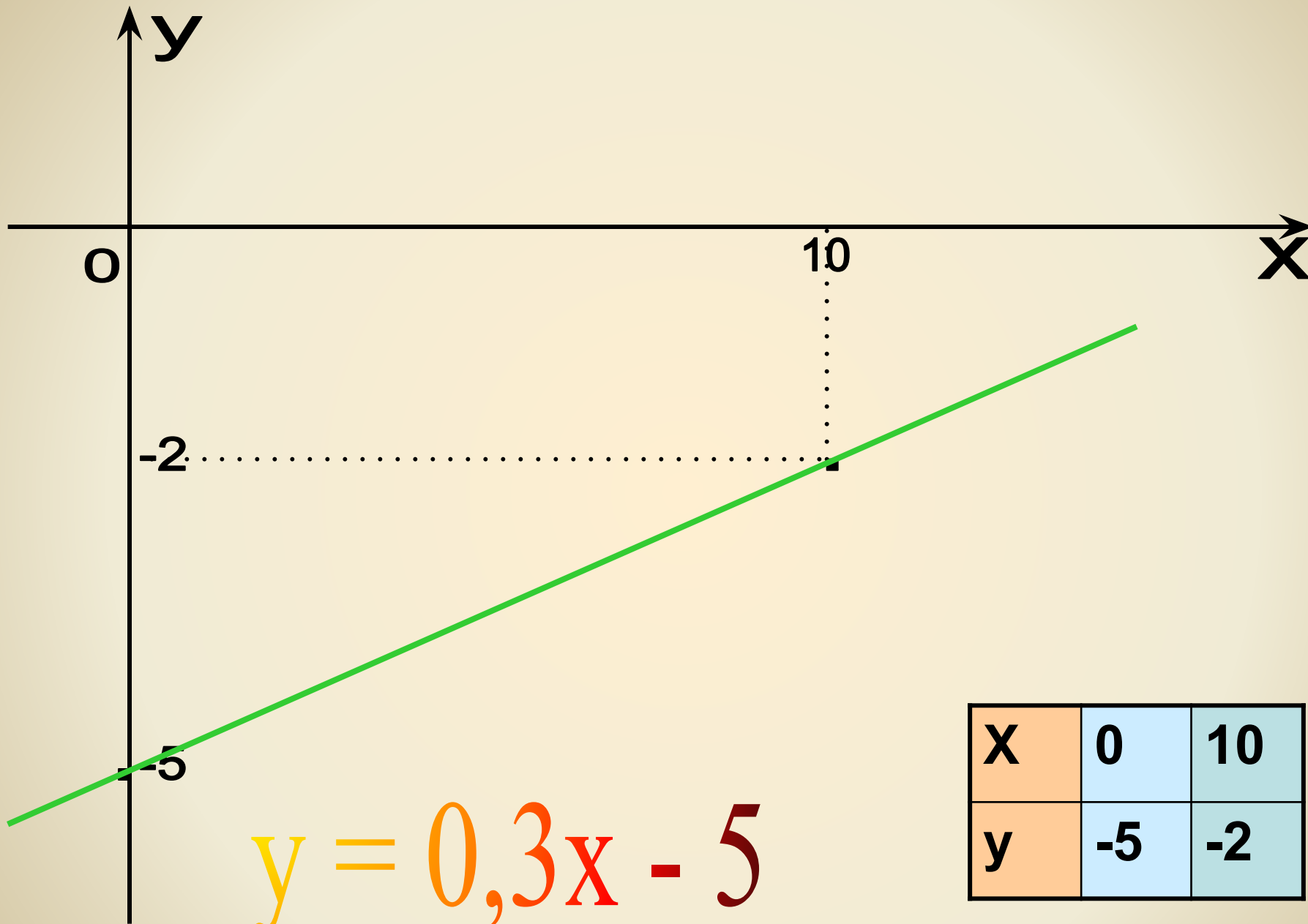


Примеры

$$y = -3x + 4$$



| | | |
|---|---|---|
| x | 0 | 1 |
| y | 4 | 1 |



| | | |
|---|----|----|
| x | 0 | 10 |
| y | -5 | -2 |

Построить график функции $y = x^2 + 2x - 8$.

1. Графиком функции является парабола, ветви которой направлены вверх.

2. $x_{\text{в}} = -b/2a = -1$; $y_{\text{в}} = -9$.

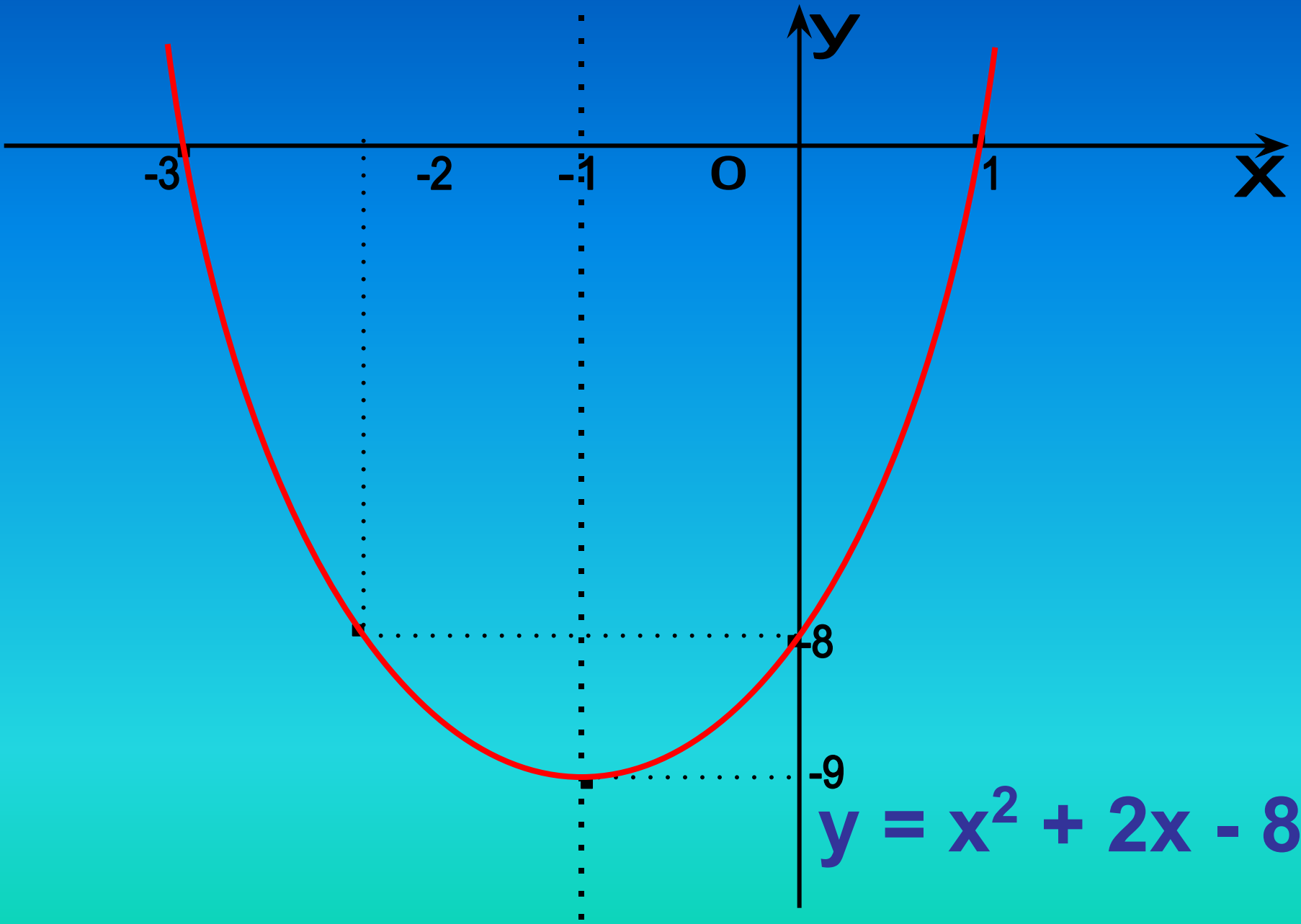
3. Нули функции: $y = 0$

$$x^2 + 2x - 8 = 0, D = 36, x_1 = -4, x_2 = 2$$

4. Пересечение с осью ОУ: $x = 0, y = -8$

$$x = -2, y = -8$$

5. Строим график.

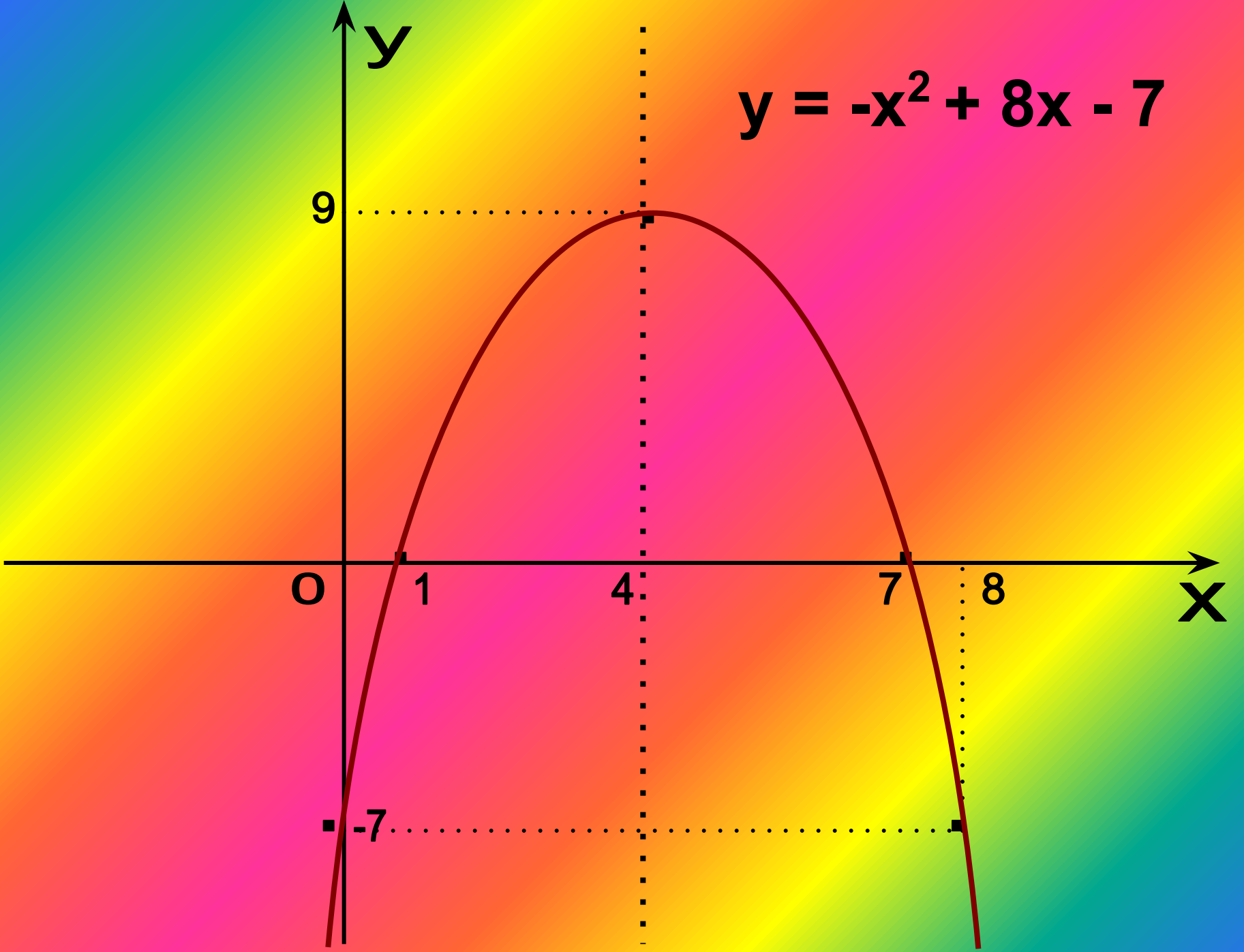


$$y = x^2 + 2x - 8$$

Построить график функции $y = -x^2 + 8x - 7$.

1. Графиком функции является парабола, ветви которой направлены вниз.
2. $x_{\text{в}} = -b/2a = 4$; $y_{\text{в}} = 9$
3. Нули функции: $y = 0$
 $-x^2 + 8x - 7 = 0$, $D = 36$, $x_1 = 7$, $x_2 = 1$
4. Пересечение с осью ОУ: $x = 0$, $y = -7$
 $x = 8$, $y = -7$
5. Строим график.

$$y = -x^2 + 8x - 7$$



На этом пока и закончим

первоначальное знакомство
с простейшими
ФУНКЦИЯМИ и их графиками.