

8 КЛАСС. АЛГЕБРА.

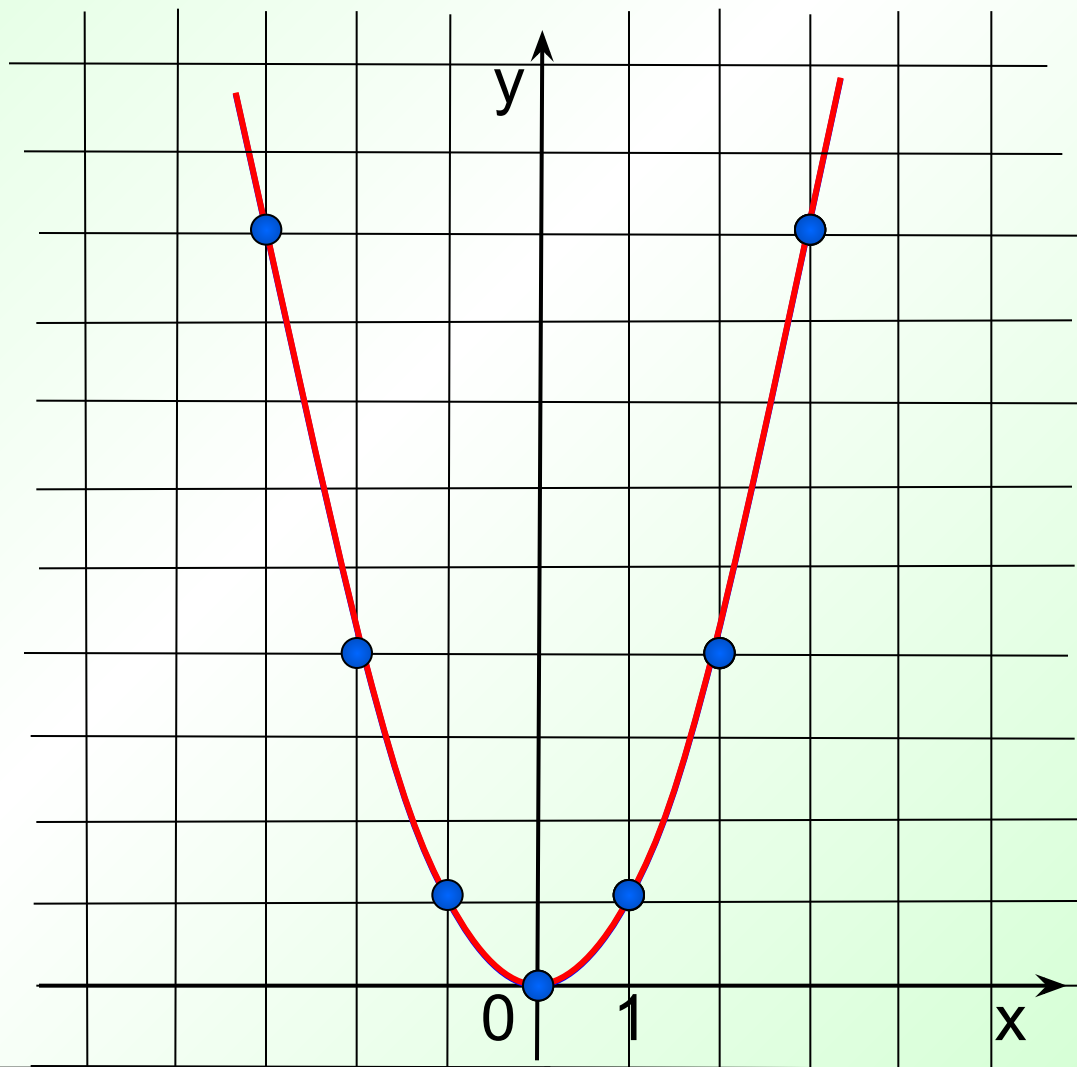
Ш.А. АЛИМОВ

Квадратичная функция

$$y = a(x - x_0)^2 + y_0$$

$$y = x^2$$

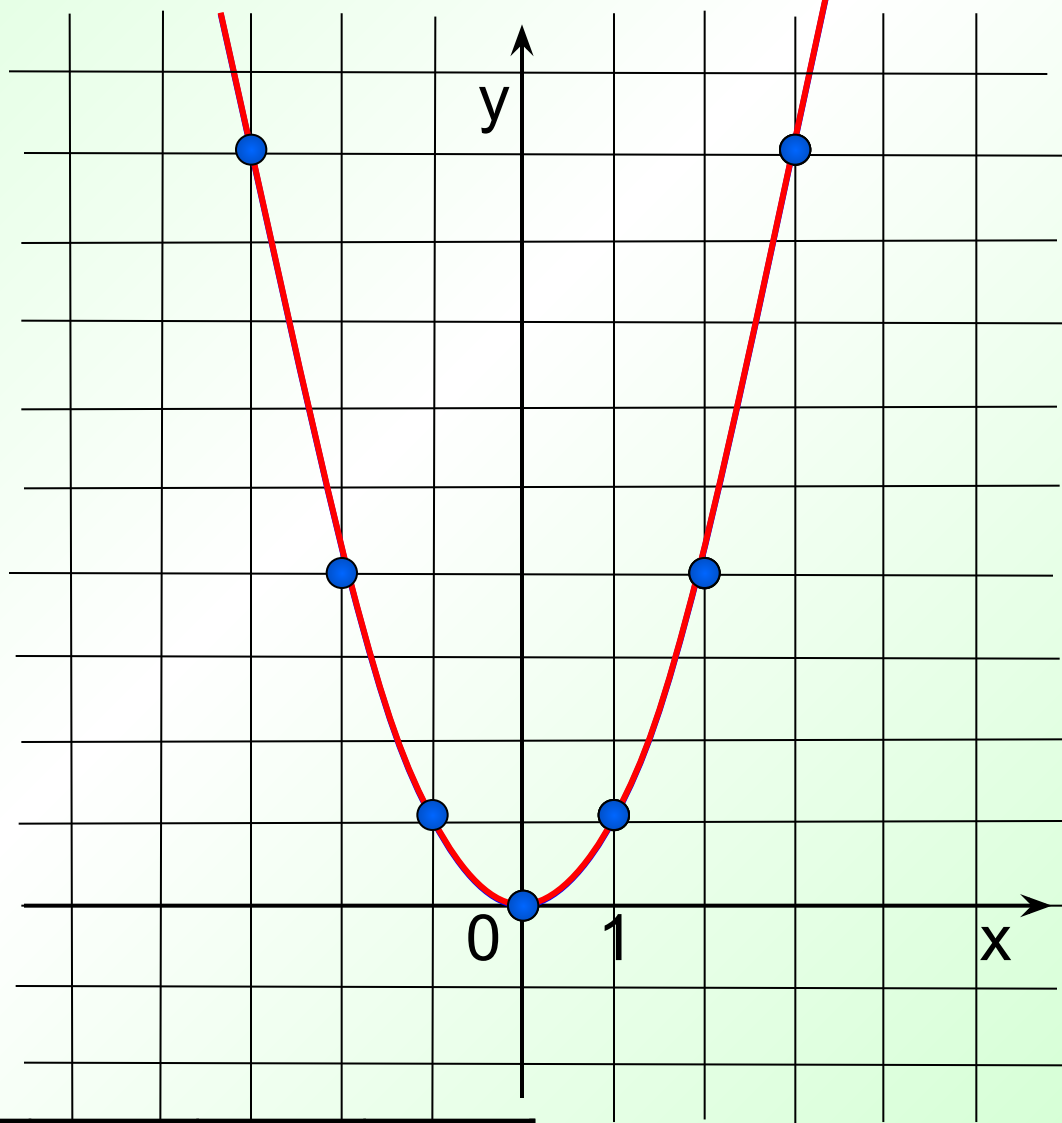
$$y = x^2 + 3$$



x	-3	-2	-1	0	1	2	3
y	12	7	4	3	4	7	12

$$y = x^2$$

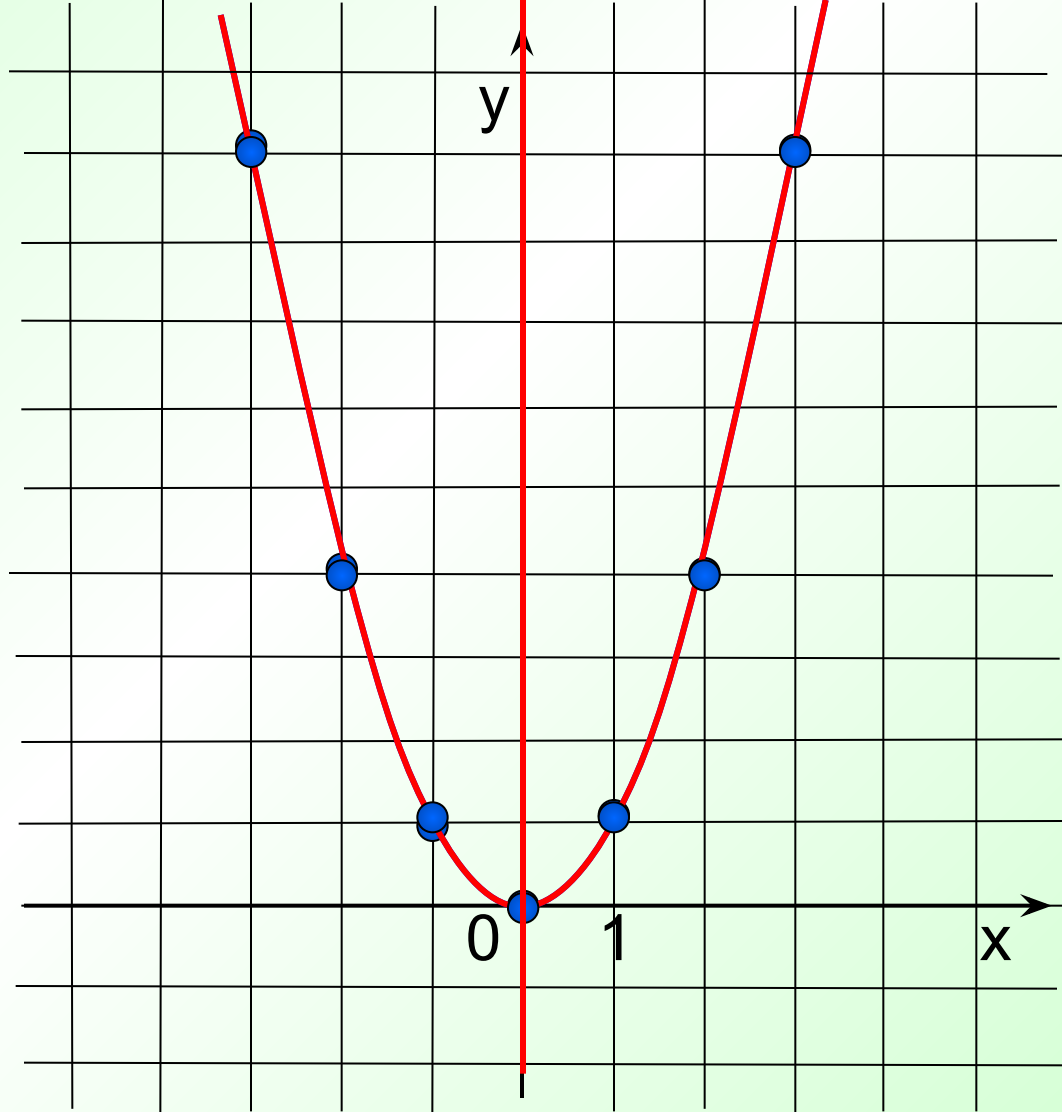
$$y = x^2 - 2$$



x	-3	-2	-1	0	1	2	3
y	9	4	-1	-2	-1	4	9

$$y = x^2$$

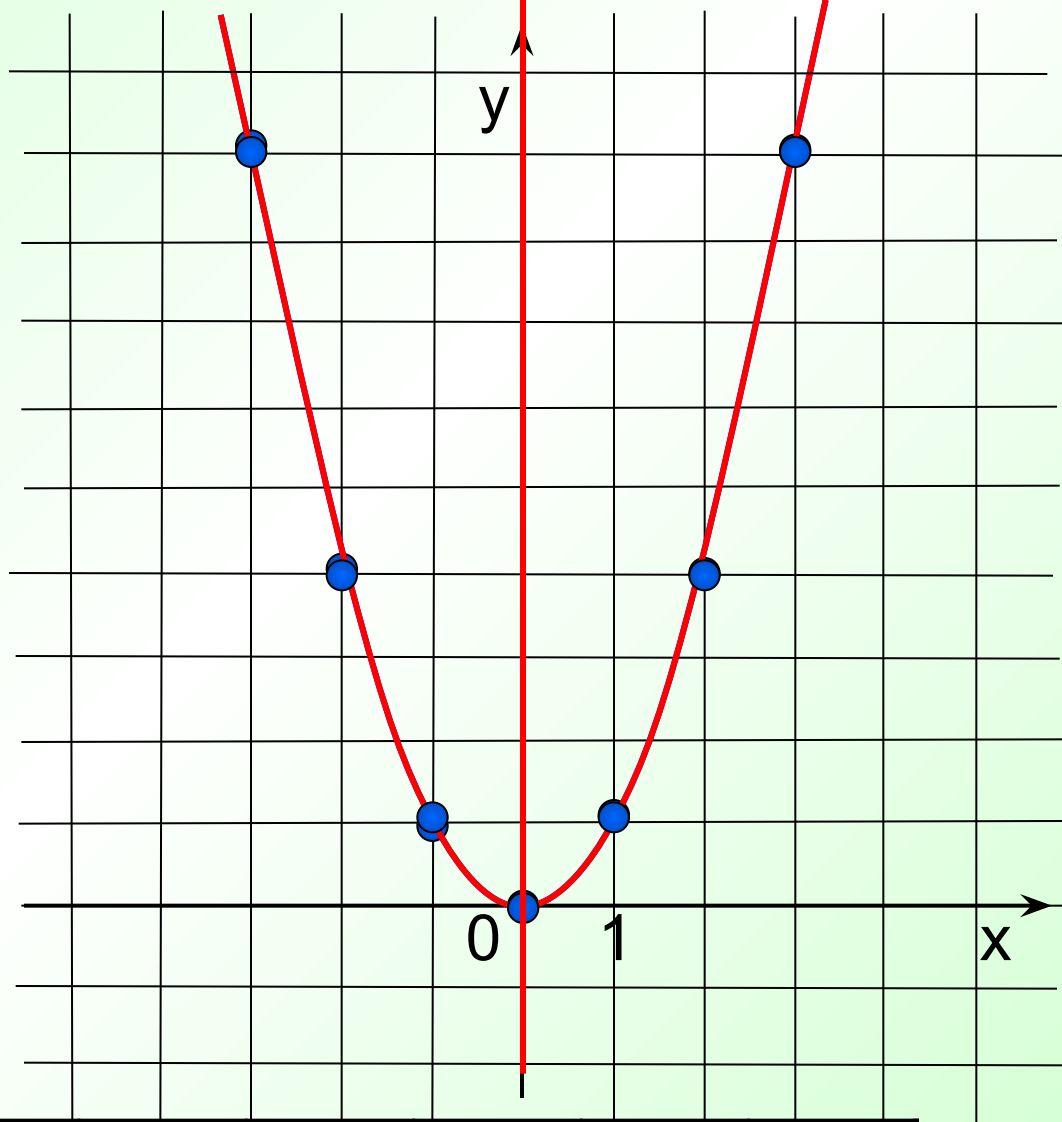
$$y = (x - 2)^2$$



x	-3	-2	-1	0	1	2	3	4	5
y	25	16	9	0	1	4	9	16	25

$$y = x^2$$

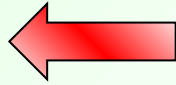
$$y = (x + 2)^2$$



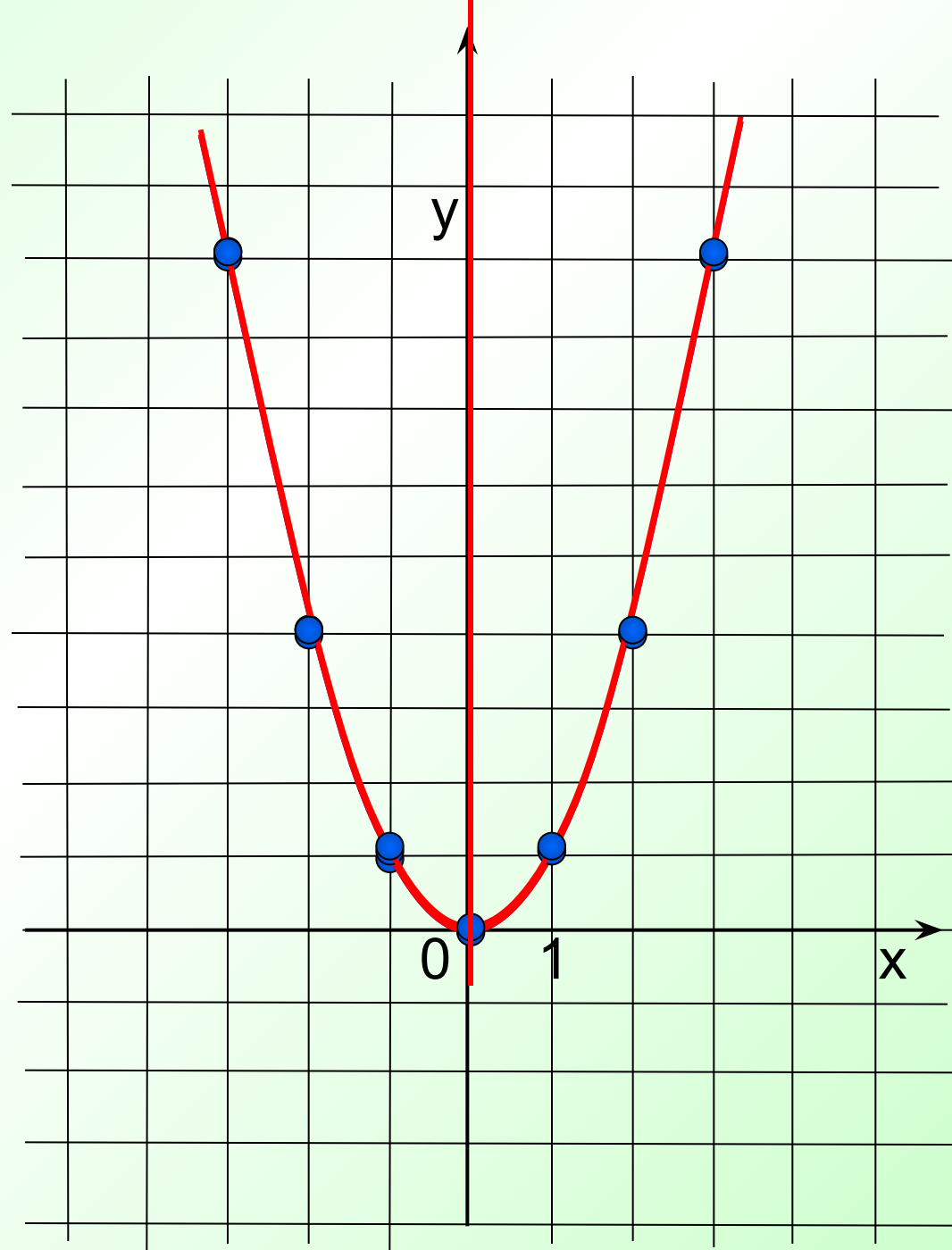
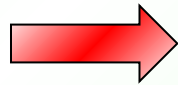
- 5	- 4	- 3	- 2	- 1	0	1	2	3
9	4 <i>y</i>	9	4	1	0	9	16	25

$$y = x^2$$

$$y = (x + 1)^2$$

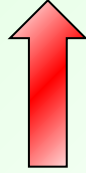


$$y = (x - 3)^2$$

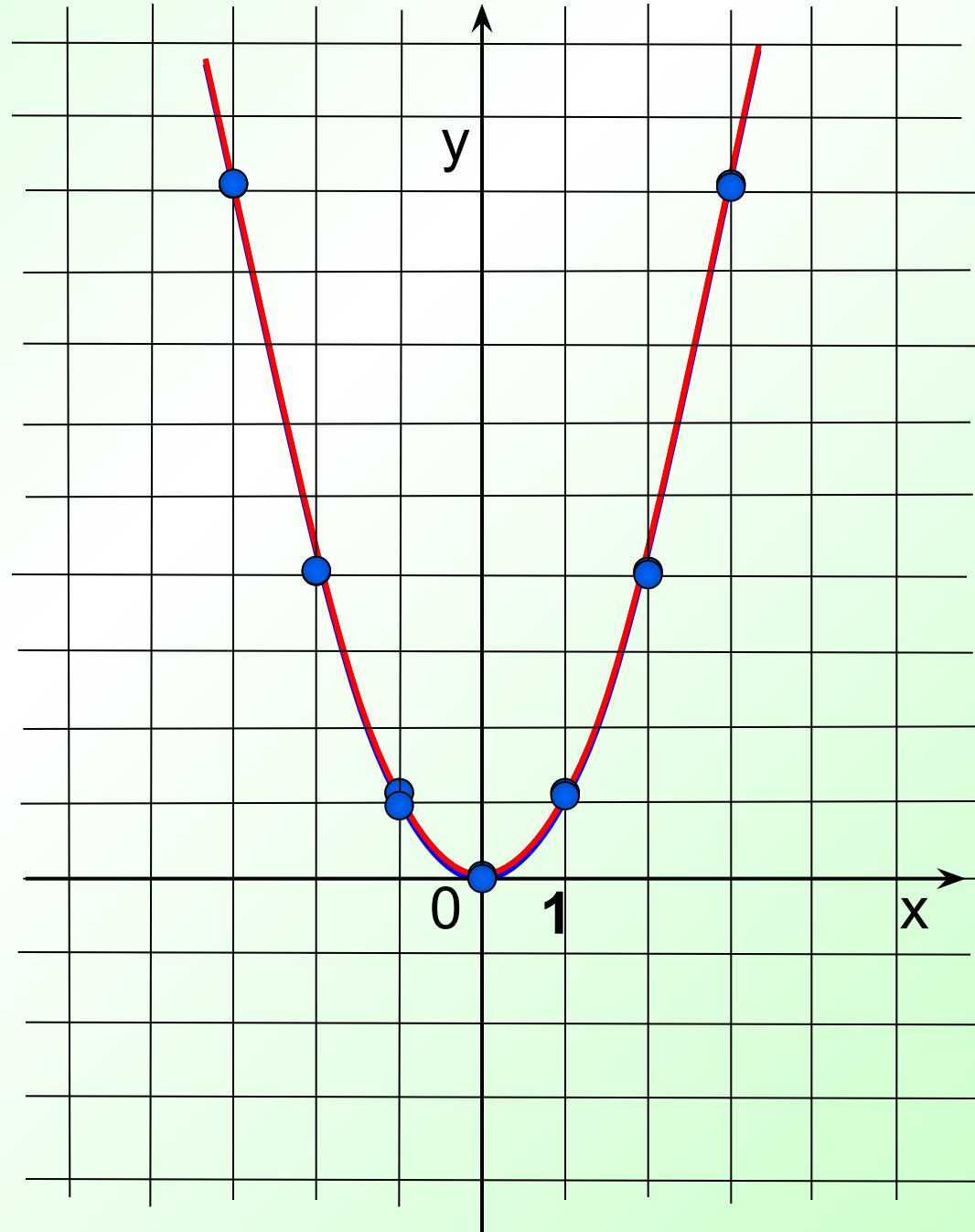
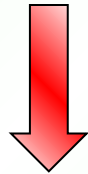


$$y = x^2$$

$$y = x^2 + 4$$

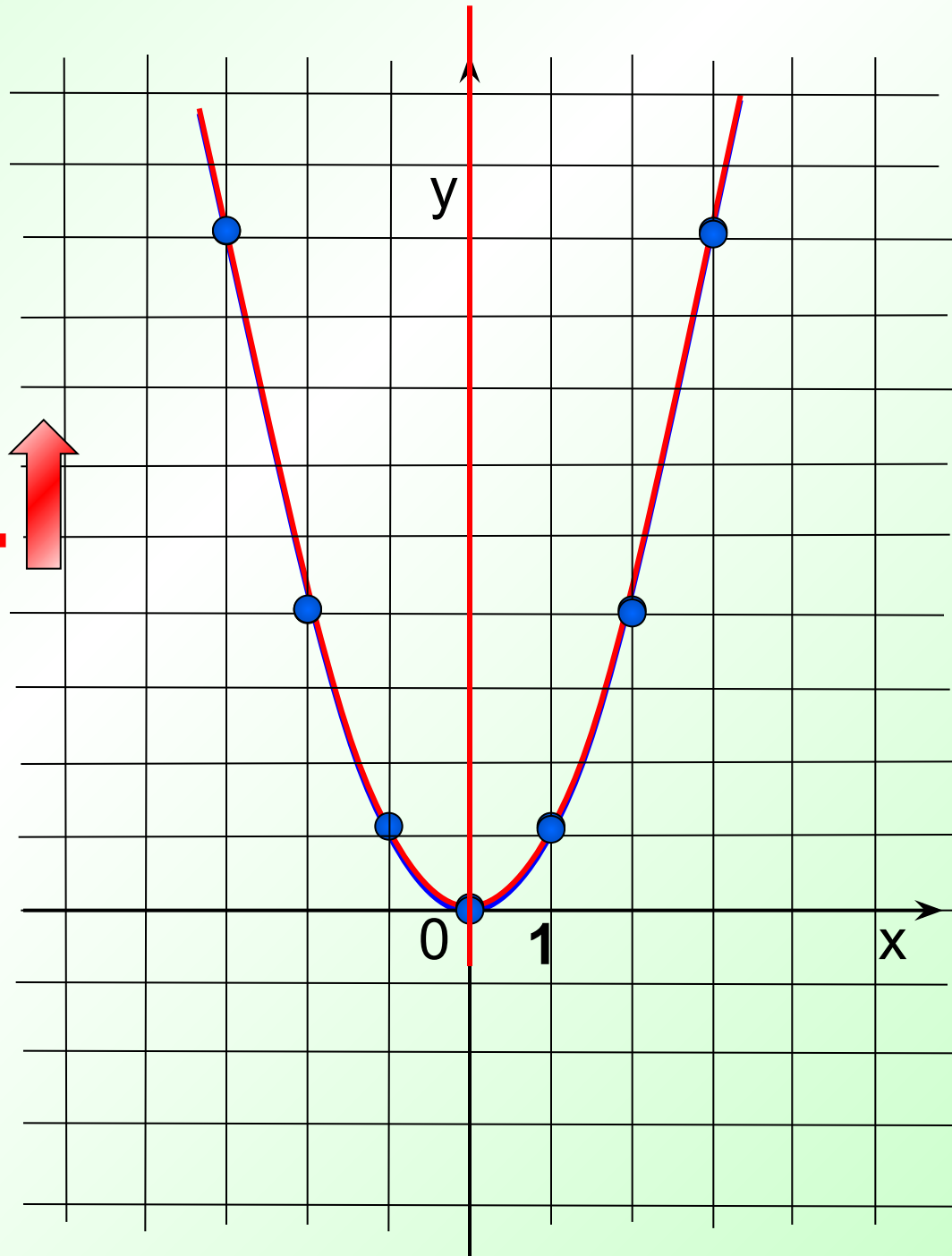
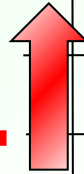
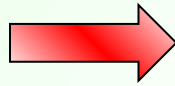


$$y = x^2 - 3$$



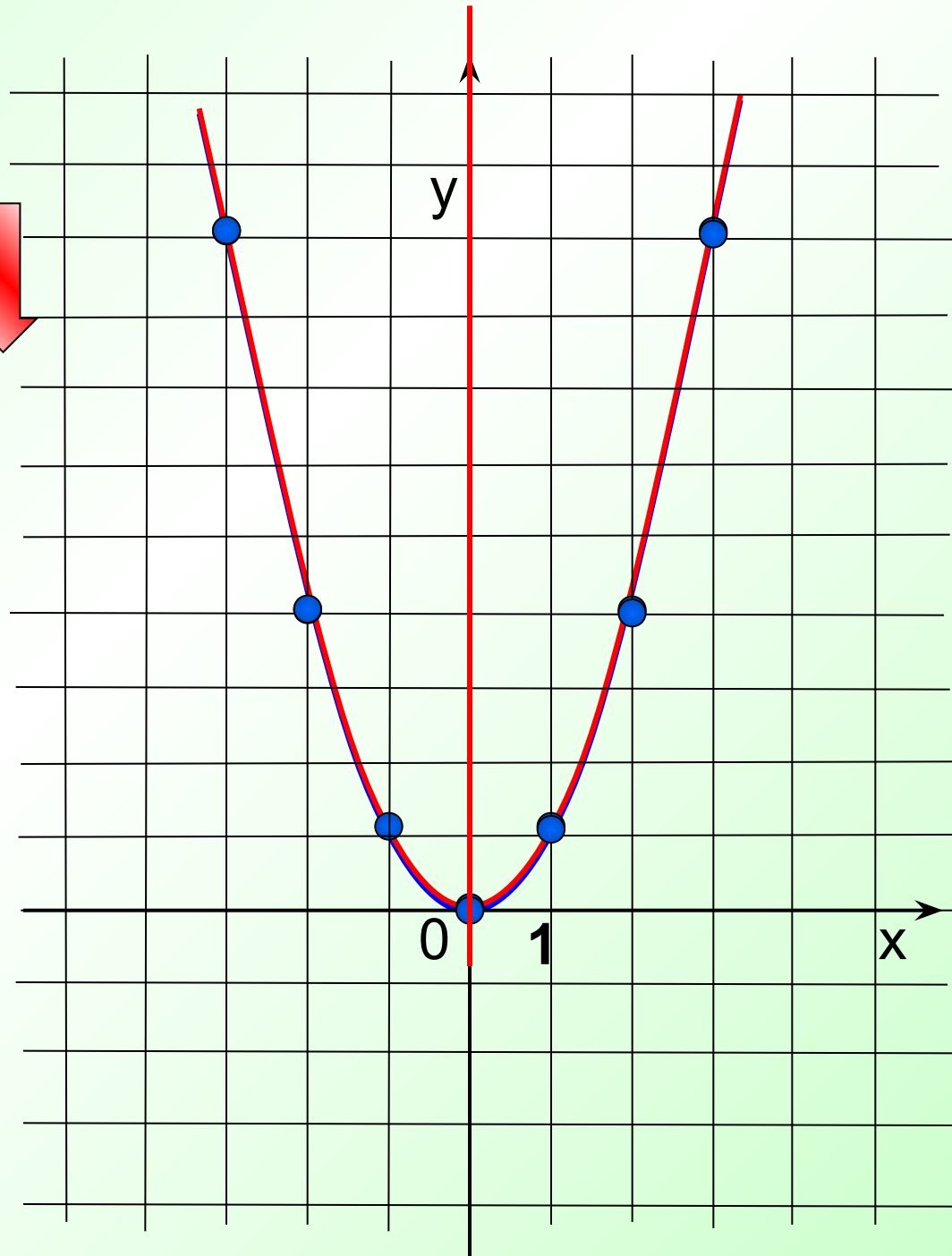
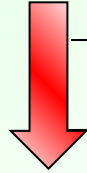
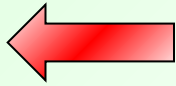
$$y = x^2$$

$$y = (x-2)^2 + 4$$



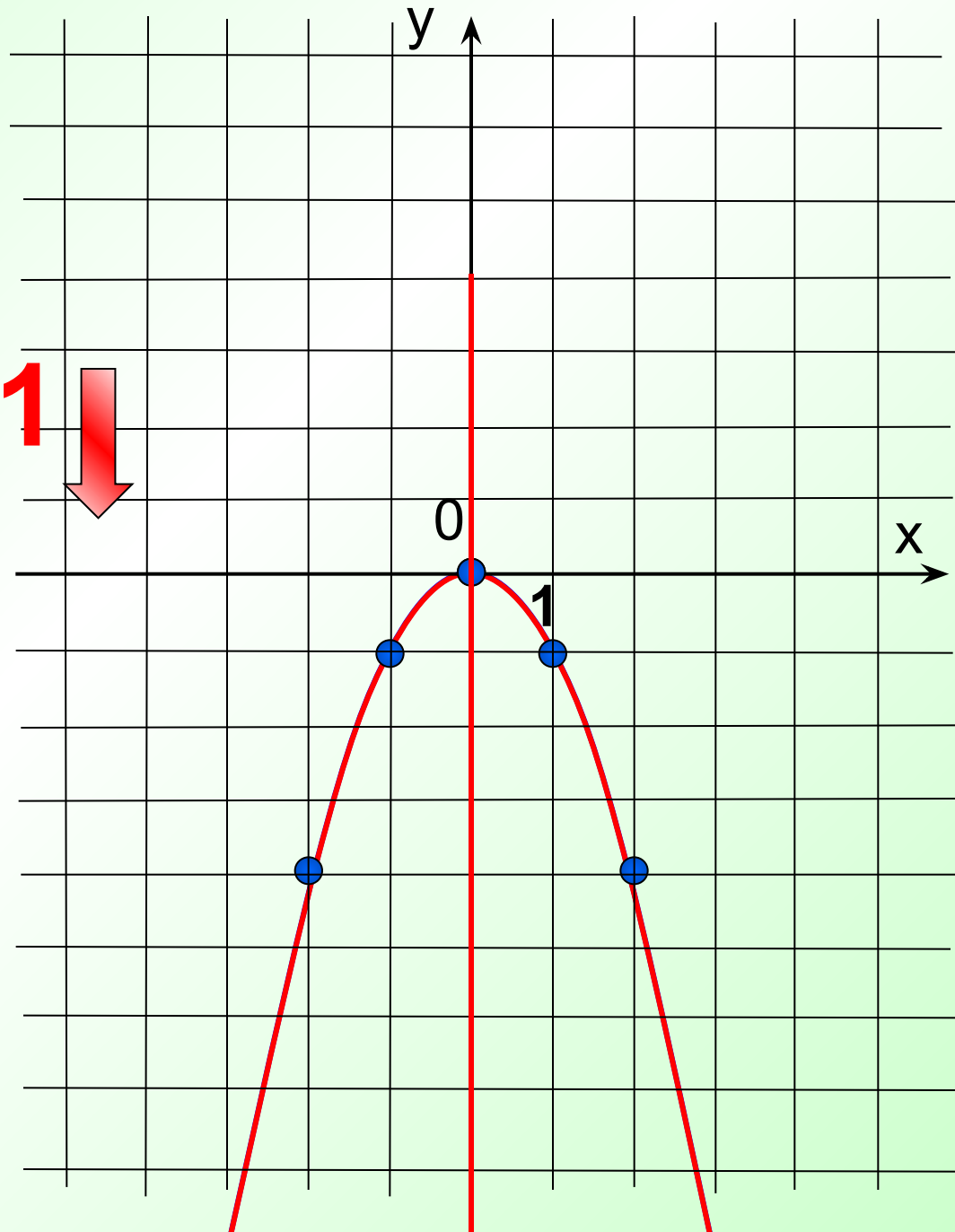
$$y = x^2$$

$$y = (x+3)^2 - 4$$



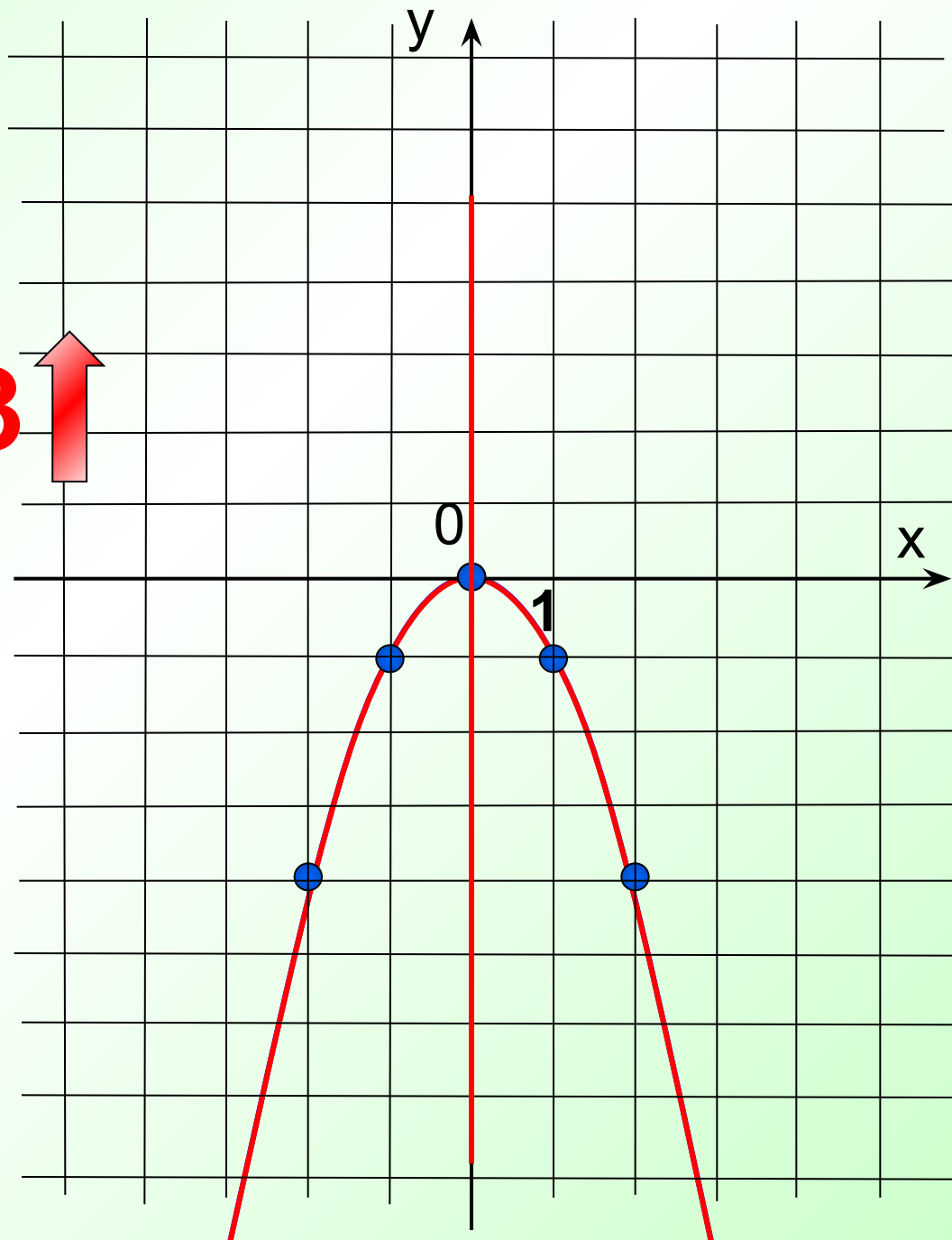
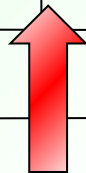
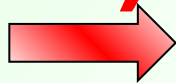
$$y = -x^2$$

$$y = -(x+3)^2 - 1$$



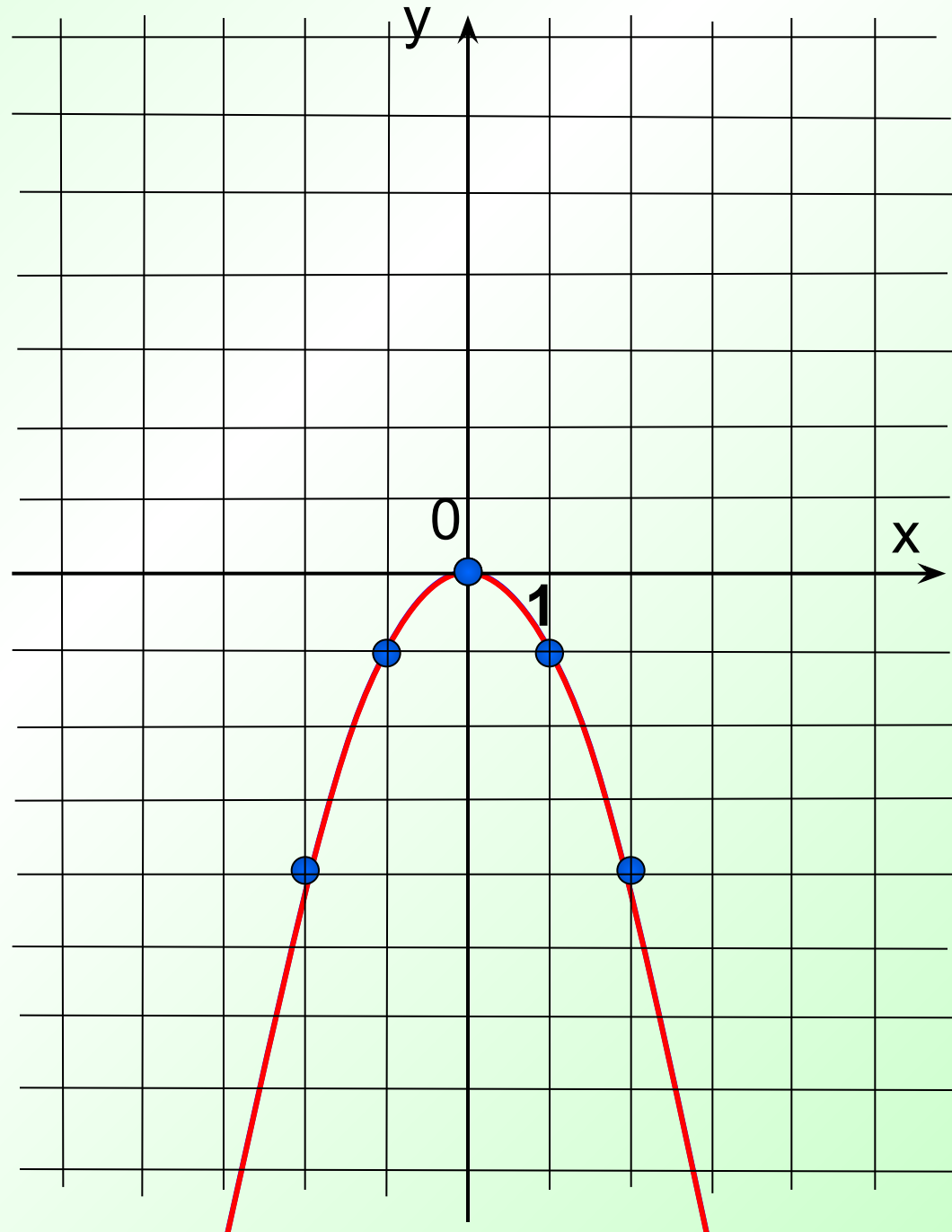
$$y = -x^2$$

$$y = -(x-3)^2 + 3$$



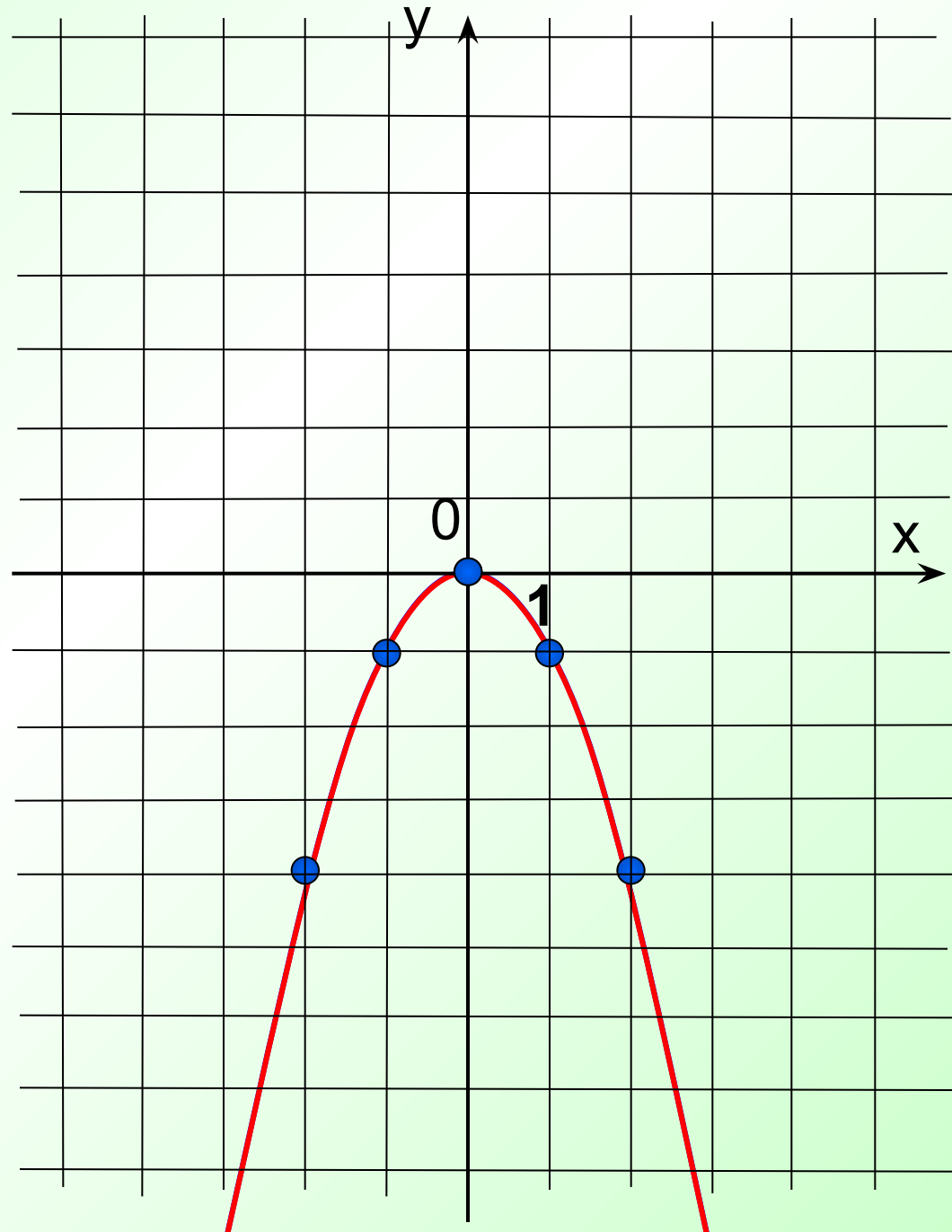
$$y = -x^2$$

$$y = -x^2 + 6 \uparrow$$

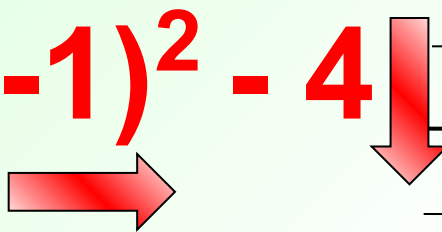


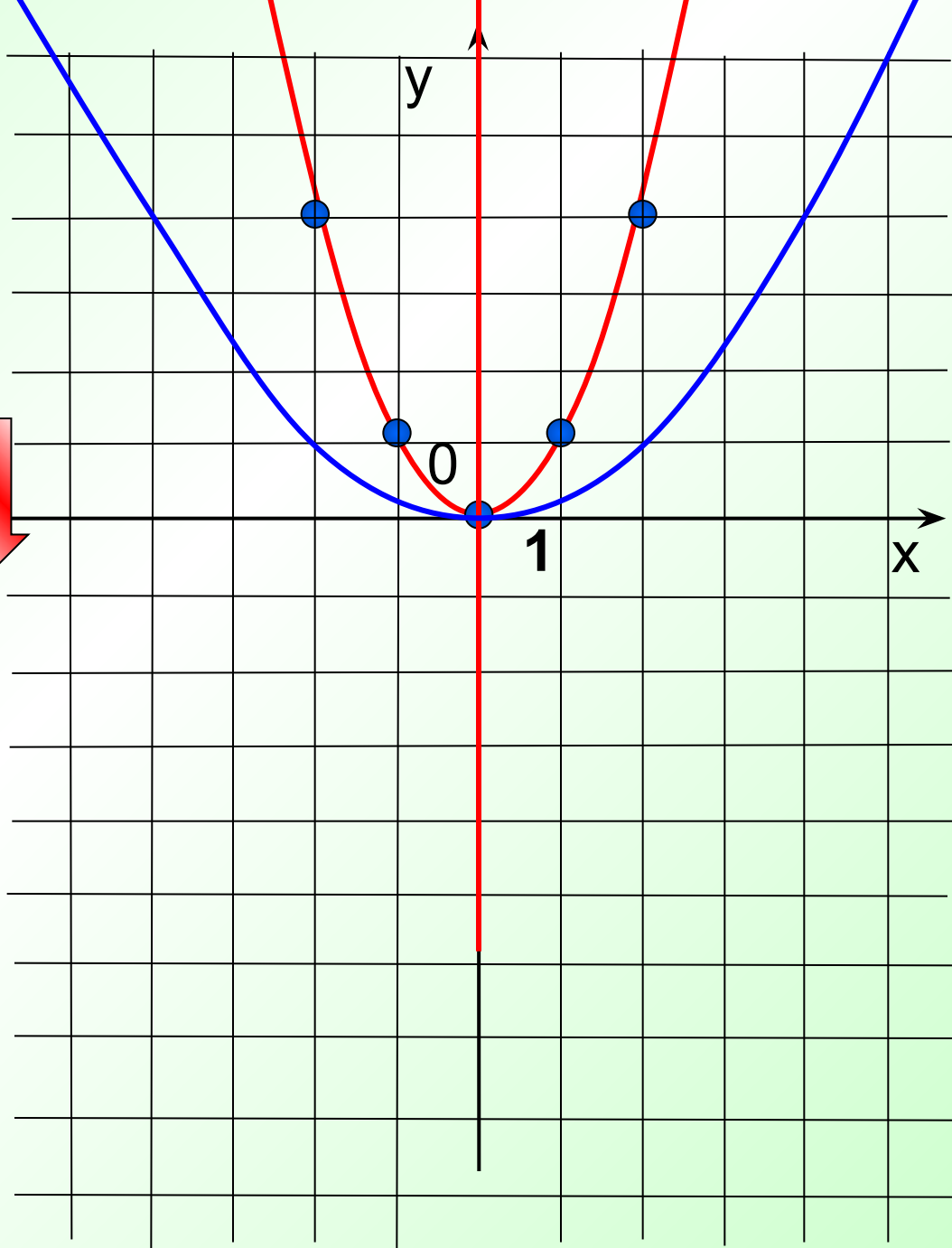
$$y = -3x^2$$

$$y = -3x^2 + 6 \uparrow$$



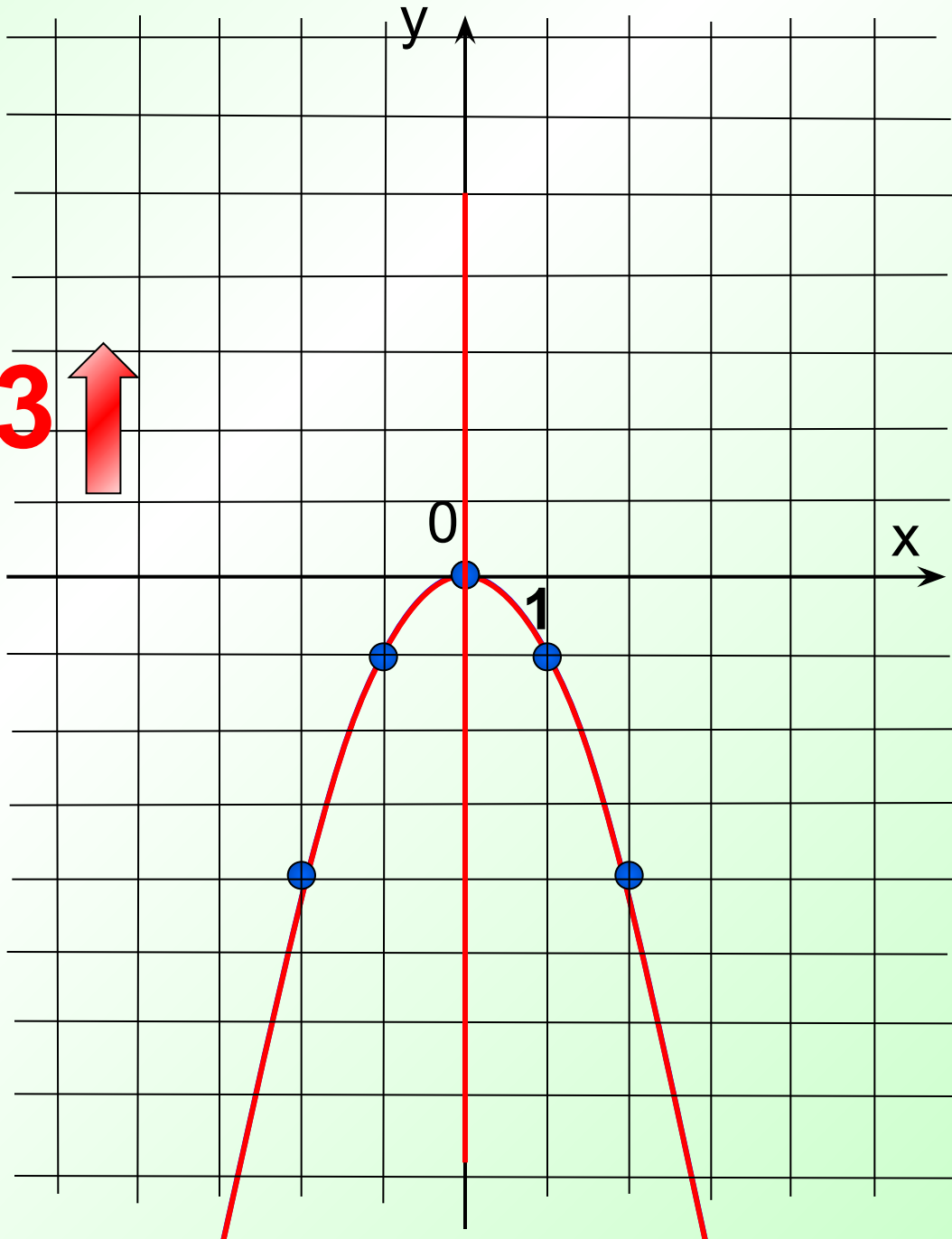
$$y = \frac{1}{4}x^2$$

$$y = \frac{1}{4}(x-1)^2 - 4$$




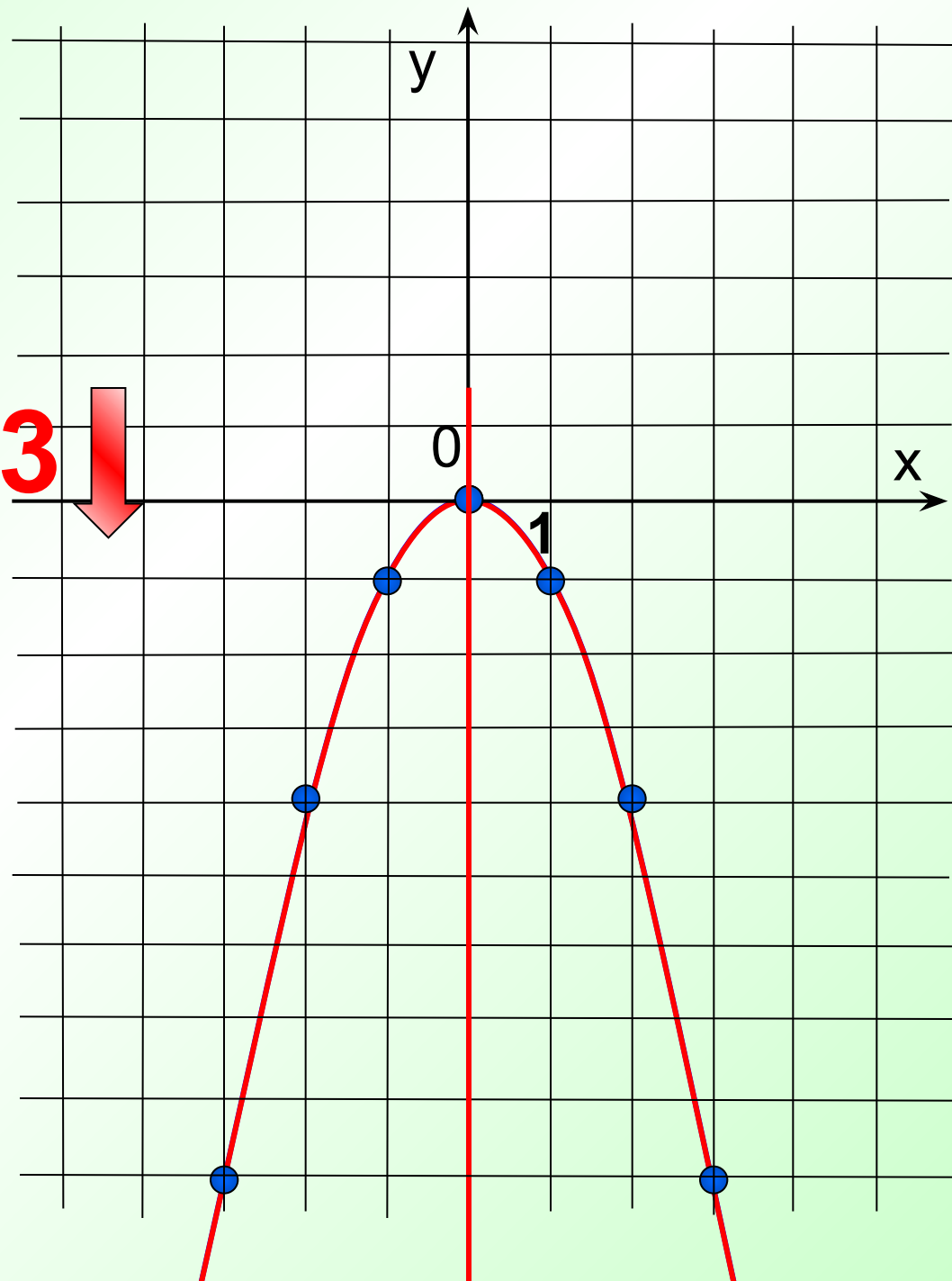
$$y = -2x^2$$

$$y = -2(x-2)^2 + 3$$



$$y = \frac{1}{2}x^2$$

$$y = -\frac{1}{2}(x+1)^2 - 3$$



$$y = a(x - x_0)^2 + y_0$$









Вершина параболы $(x_0; y_0)$

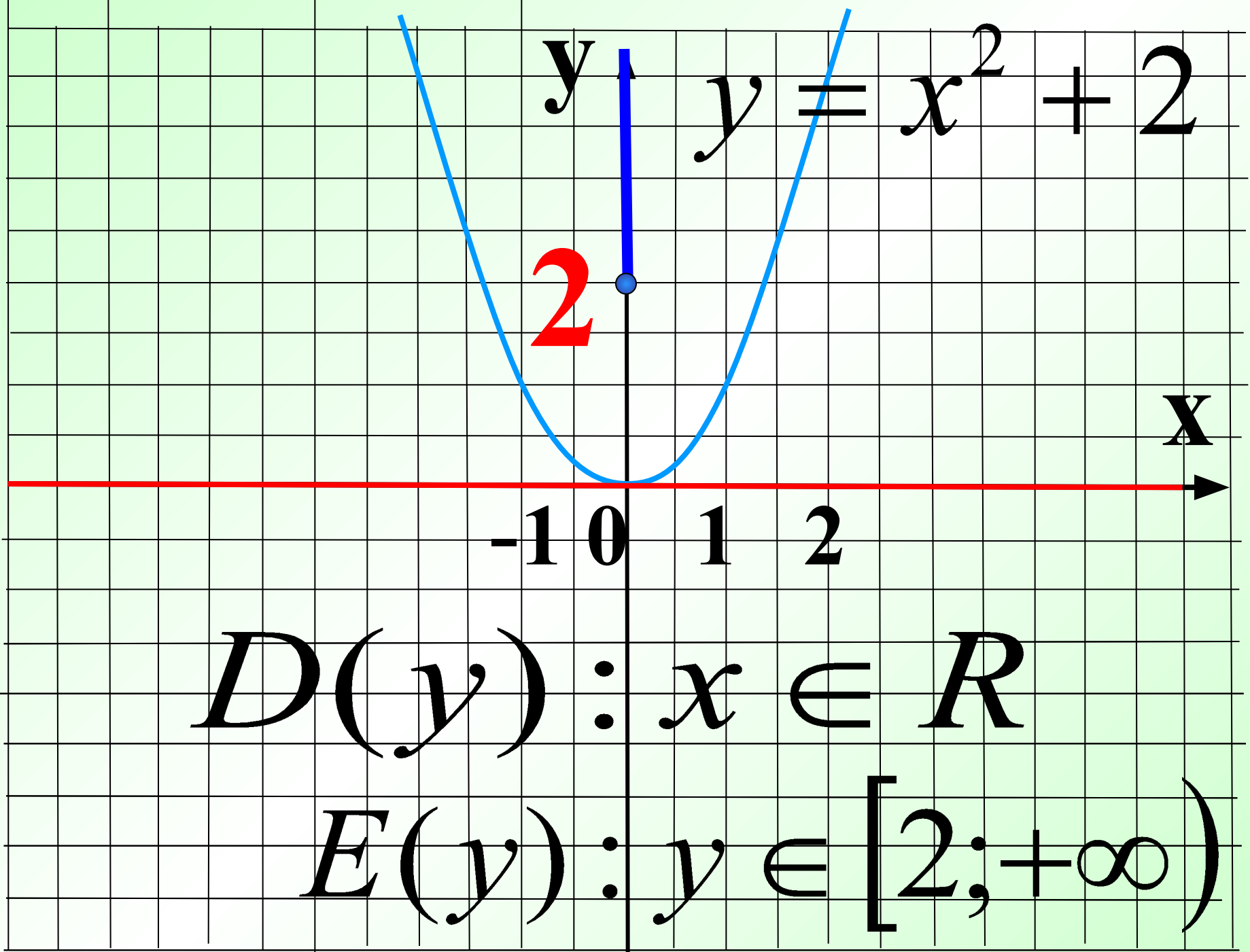
Ось симметрии $x = x_0$

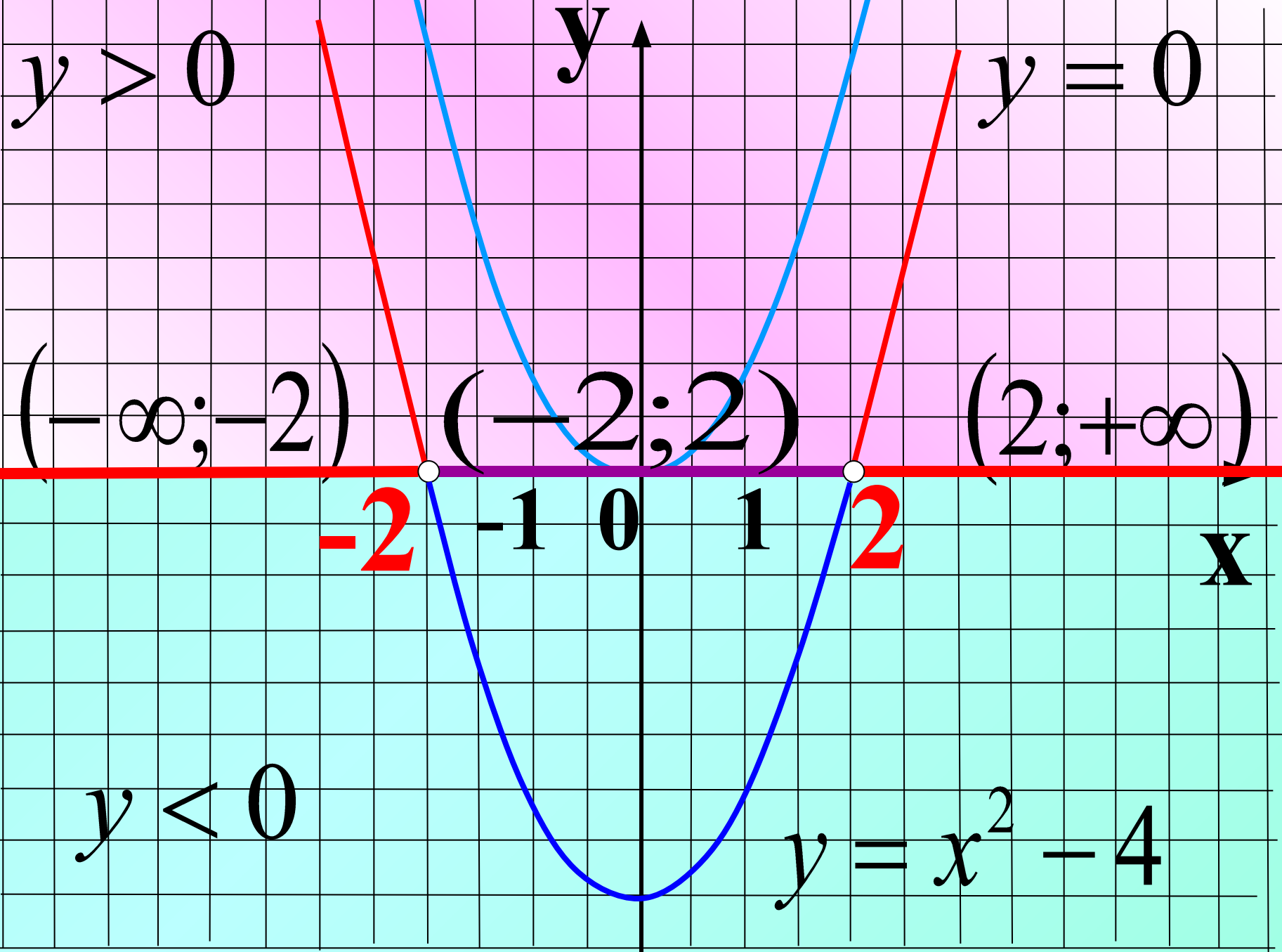
Шаблон $y = ax^2$

$a > 0$, то ветви направлены вверх

$a < 0$, то ветви направлены вниз

	Направл ветвей	Вершина	Ось сим.	Шаблон
$y = x^2 + 5$		(\checkmark 0; 5)	$x = 0$	$y = x^2$
$y = (x-2)^2 + 5$		(\checkmark 2; 5)	$x = 2$	$y = x^2$
$y = 2x^2 - 3$		(\checkmark 0; -3)	$x = 0$	$y = 2x^2$
$y = -(x+3)^2 - 2$		(\checkmark -3; -2)	$x = -3$	$y = x^2$
$y = 2(x-1)^2 + 1$		(\checkmark 1; 1)	$x = 1$	$y = 2x^2$
$y = -3(x+2)^2 - 4$		(\checkmark -2; -4)	$x = -2$	$y = 3x^2$
$y = -(x+3)^2$		(\checkmark -3; 0)	$x = -3$	$y = x^2$
$y = 2(x-4)^2$		(\checkmark 4; 0)	$x = 4$	$y = 2x^2$





$y > 0$

y

$y = 0$

$(-\infty; -2)$

$(-2; 2)$

$(2; +\infty)$

-2

-1

0

1

2

x

$y < 0$

$y = x^2 - 4$



y

$$y = (x + 2)^2$$

$(-\infty; -2]$

$[-2; +\infty)$

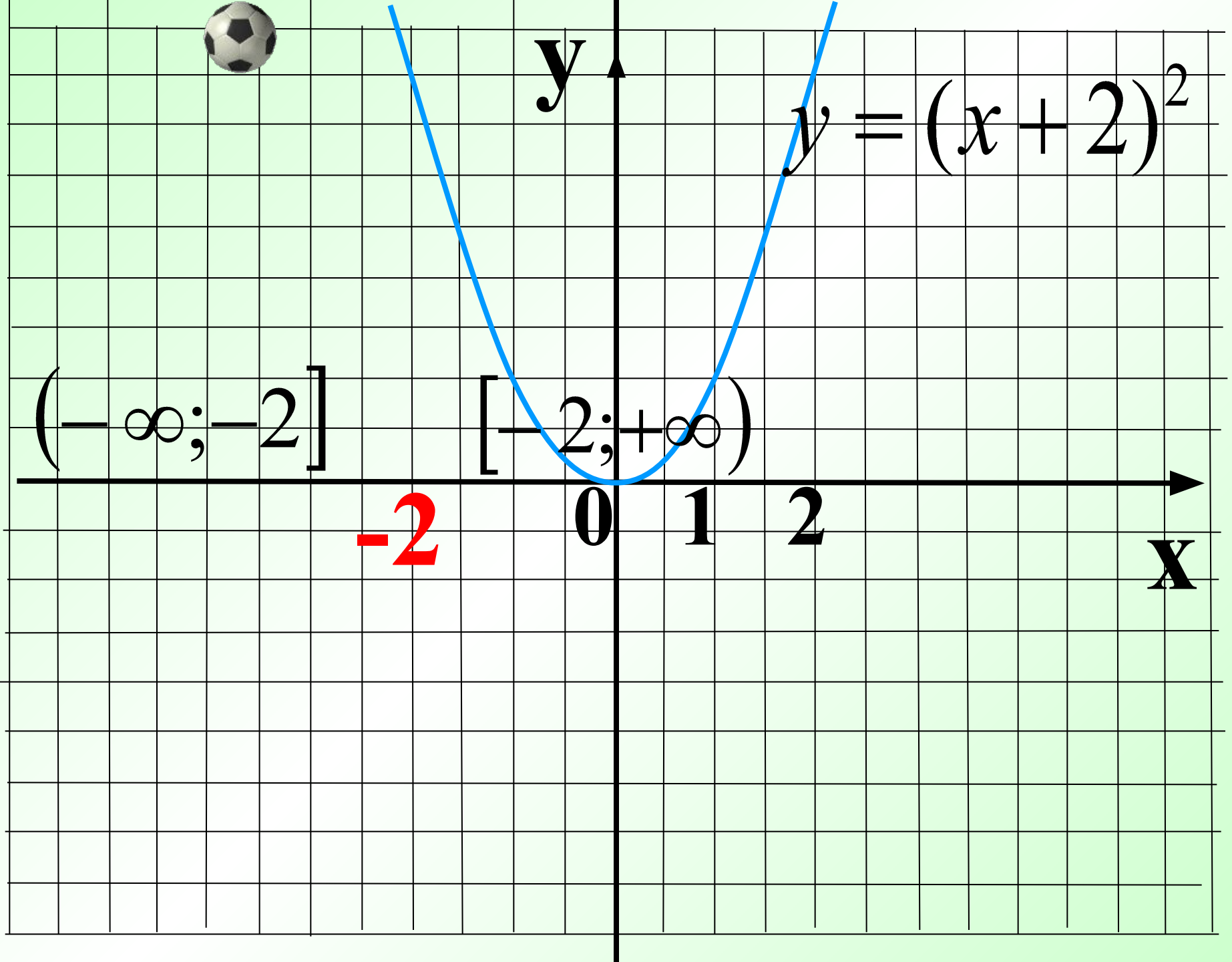
-2

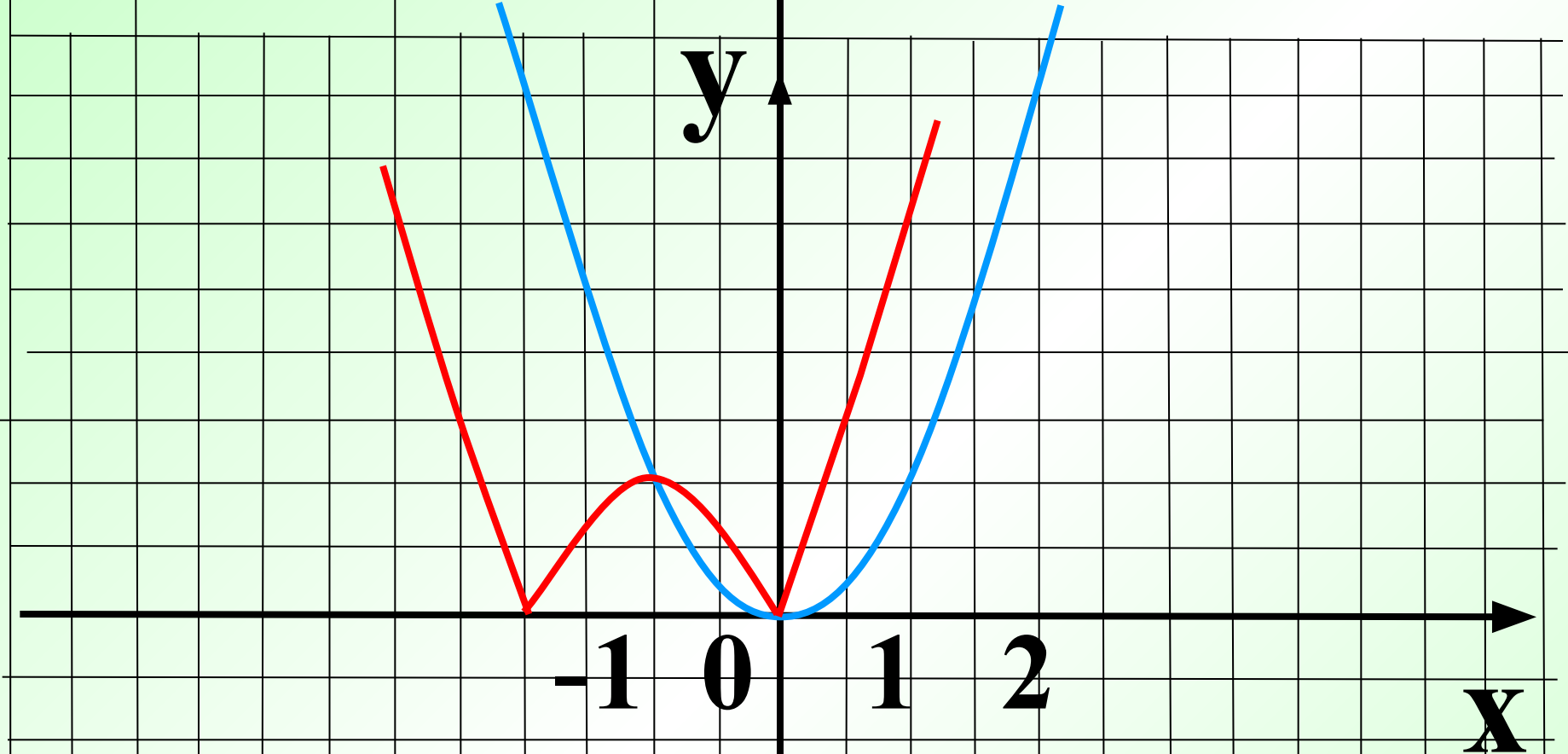
0

1

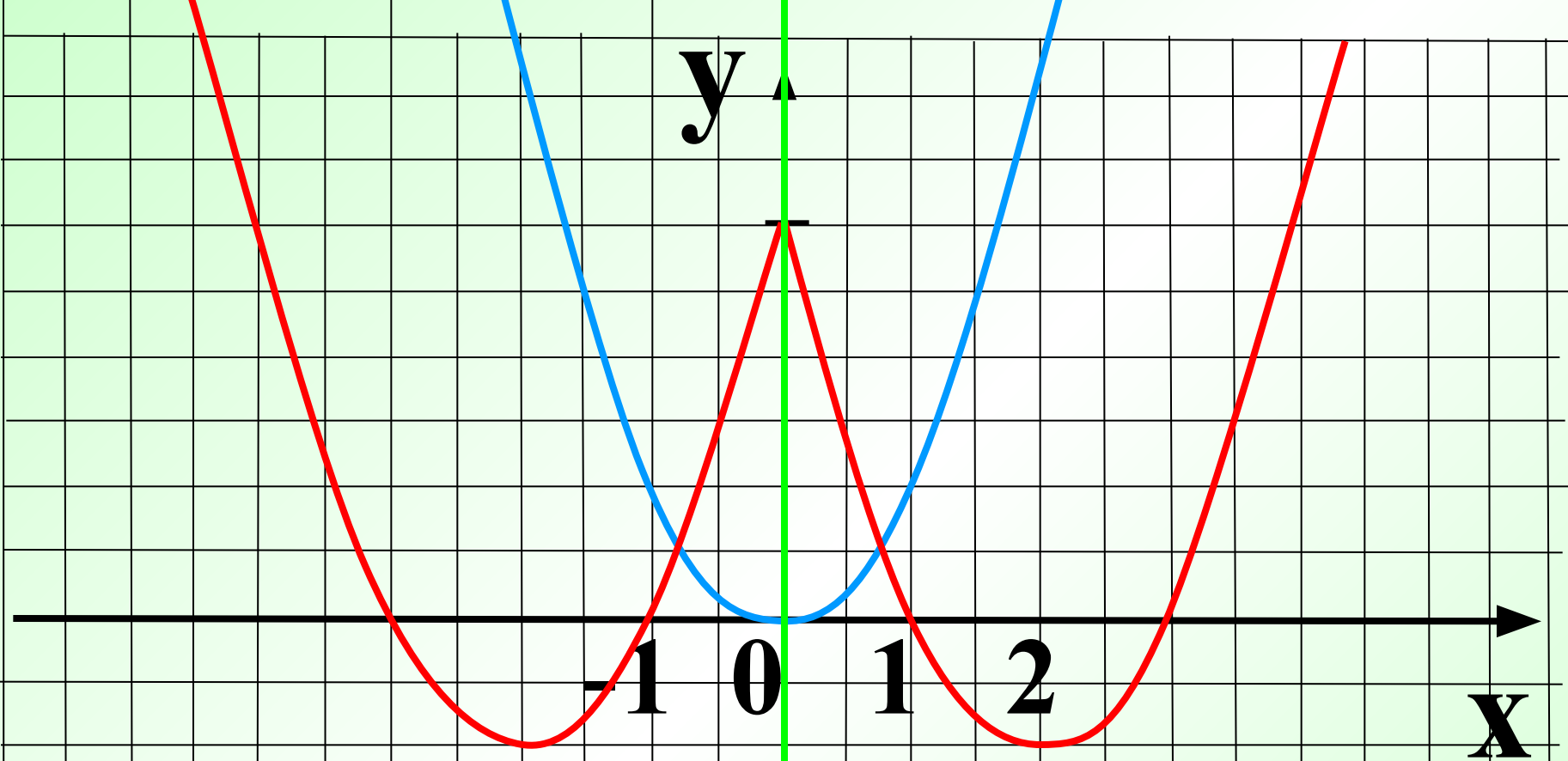
2

x





$$y = |(x + 1)^2 - 1|$$



$$y = (|x| - 2)^2 - 1$$