Урок по алгебре и началам анализа и информатике в 11 классе

Тема урока:
«Построение графиков функций и уравнений, содержащих переменную под знаком модуля»

Тип урока:

«Урок обобщения и систематизации знаний»

Технология урока

Проектная деятельность, интегрированный урок (математика + информатика).

Задачи:

- актуализация знаний о графиках функций и уравнений,
- закрепление знаний о построении графиков линейной, квадратичной и тригонометрической функций,
- повторение преобразования симметрии относительно прямой;
- знакомство с графиком логарифмической функции;
- укрепление умений и навыков в работе по образцу и в сходных условиях;
- перенос знаний в новые условия.

Основная цель урока

чтобы учащиеся самостоятельно овладели новыми знаниями, с помощью наводящих вопросов учителя переносили усвоенные знания в новые условия, творчески применяли их.

Линейная функция

|У|У|У|=|У|=f(x)

Квадратичная функция

Задание классу

Тригонометрическая функция

Домашнее задание

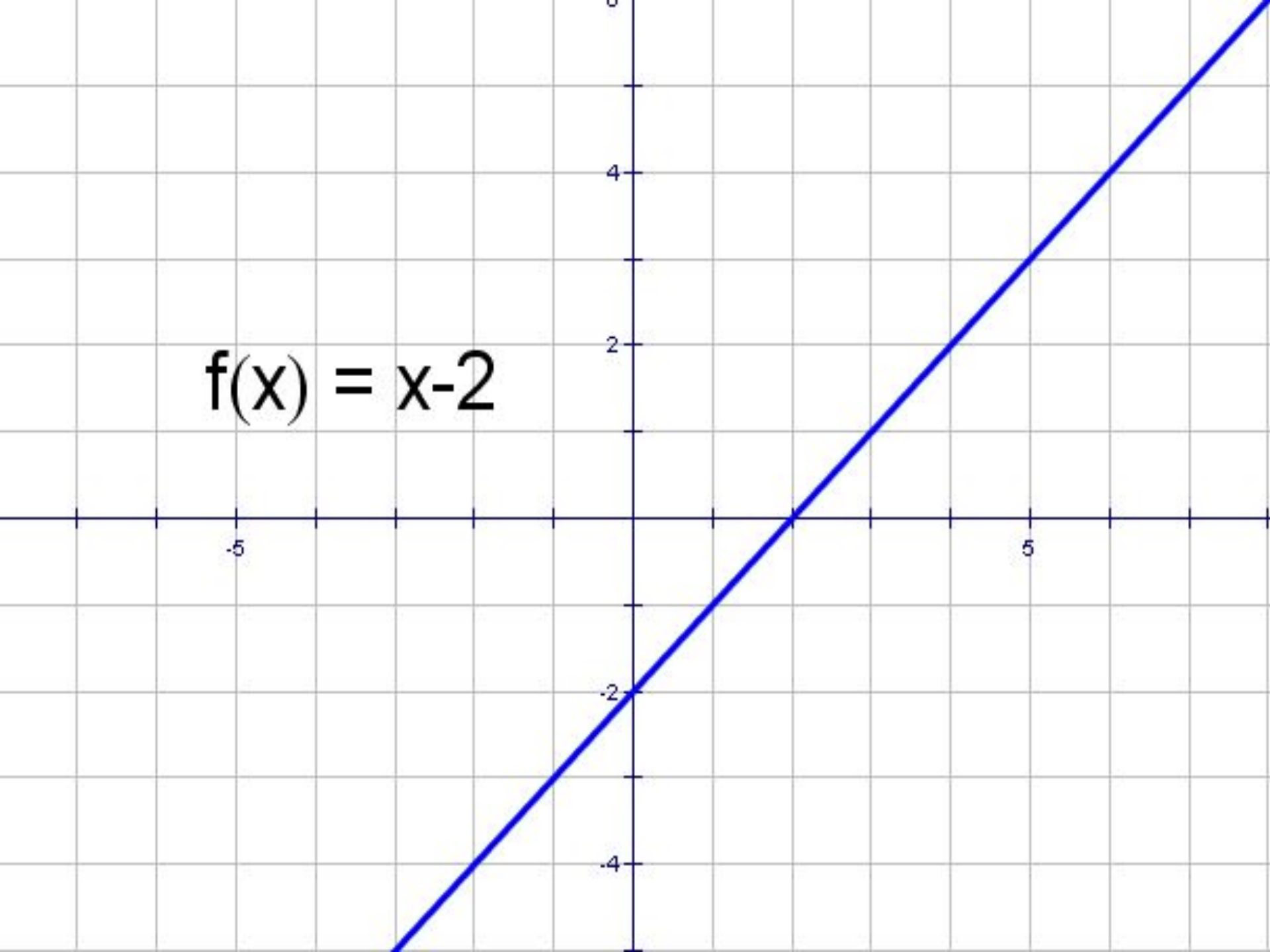
У=У=|f(x)|

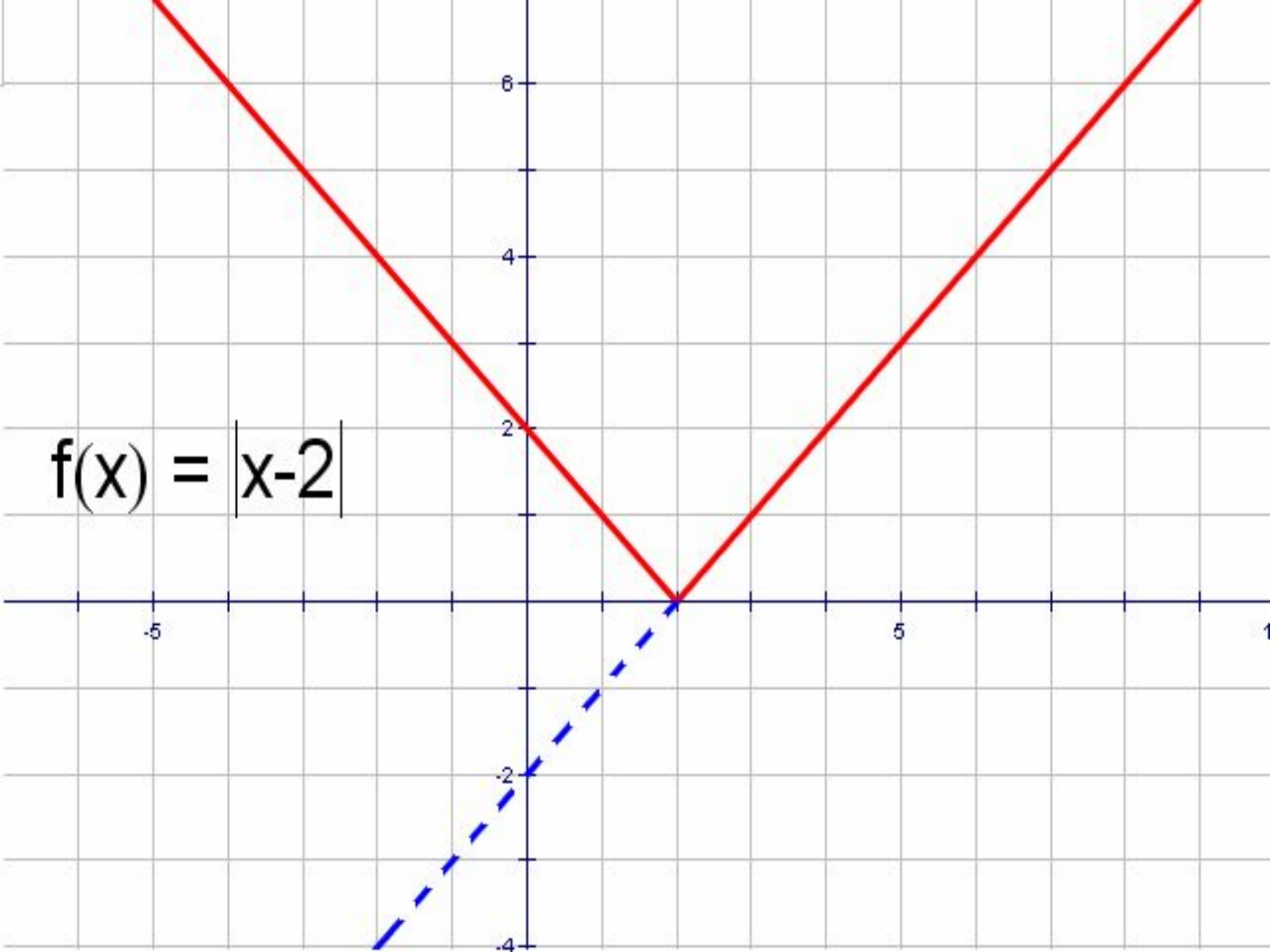
Рефлексия

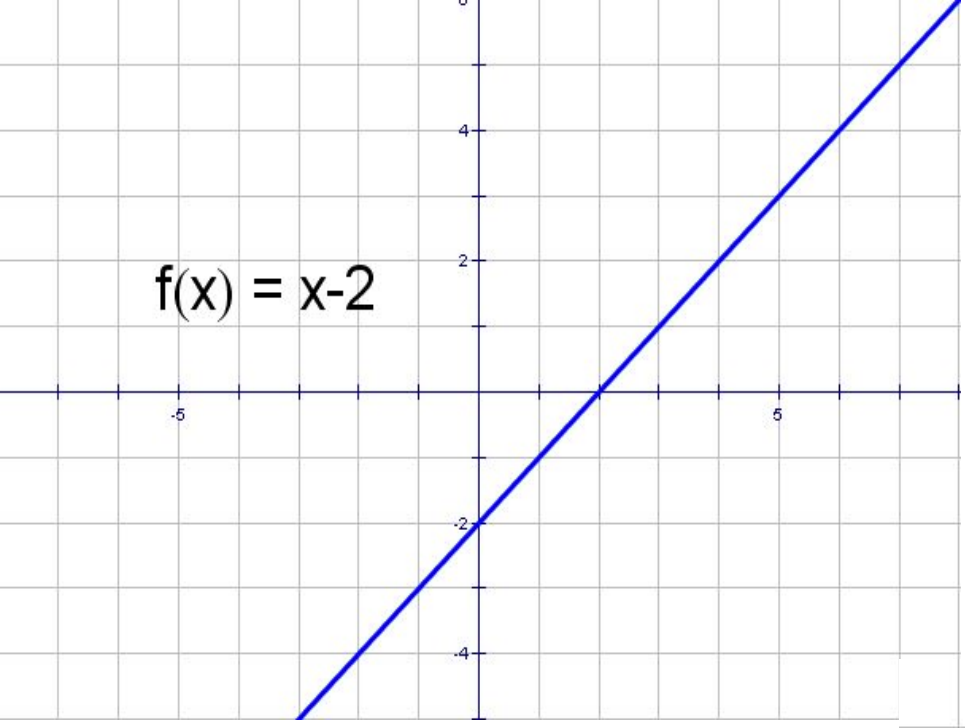
У=У=f(|x|)

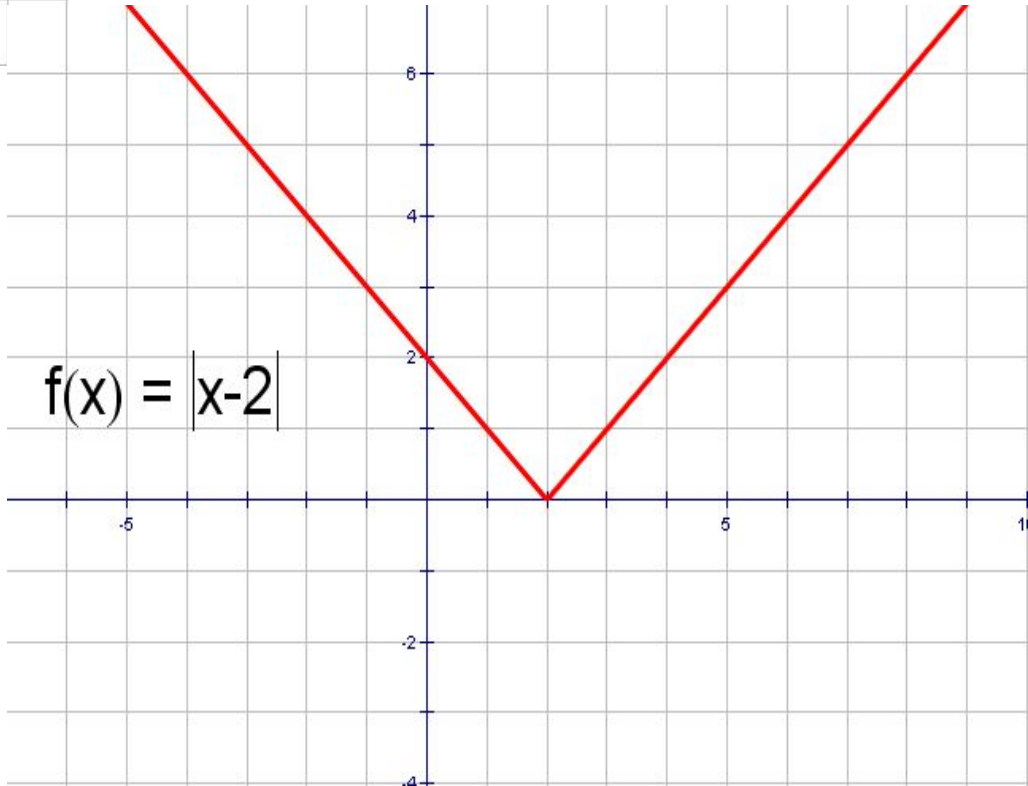
вопрос классу

$y = x - 2$ и $y = |x - 2|$

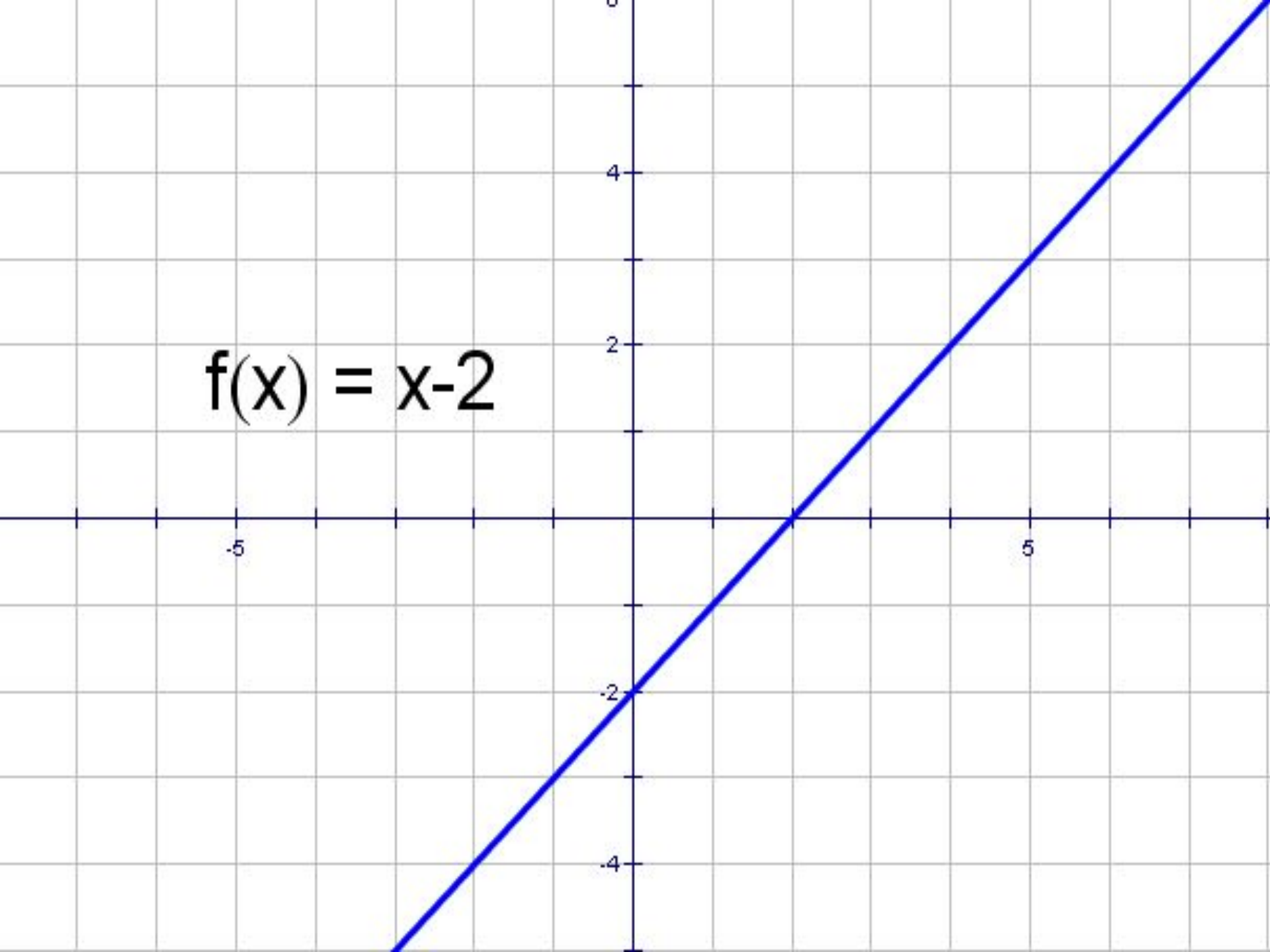

f(x) = x-2
4
2
-2
-4
-5
5

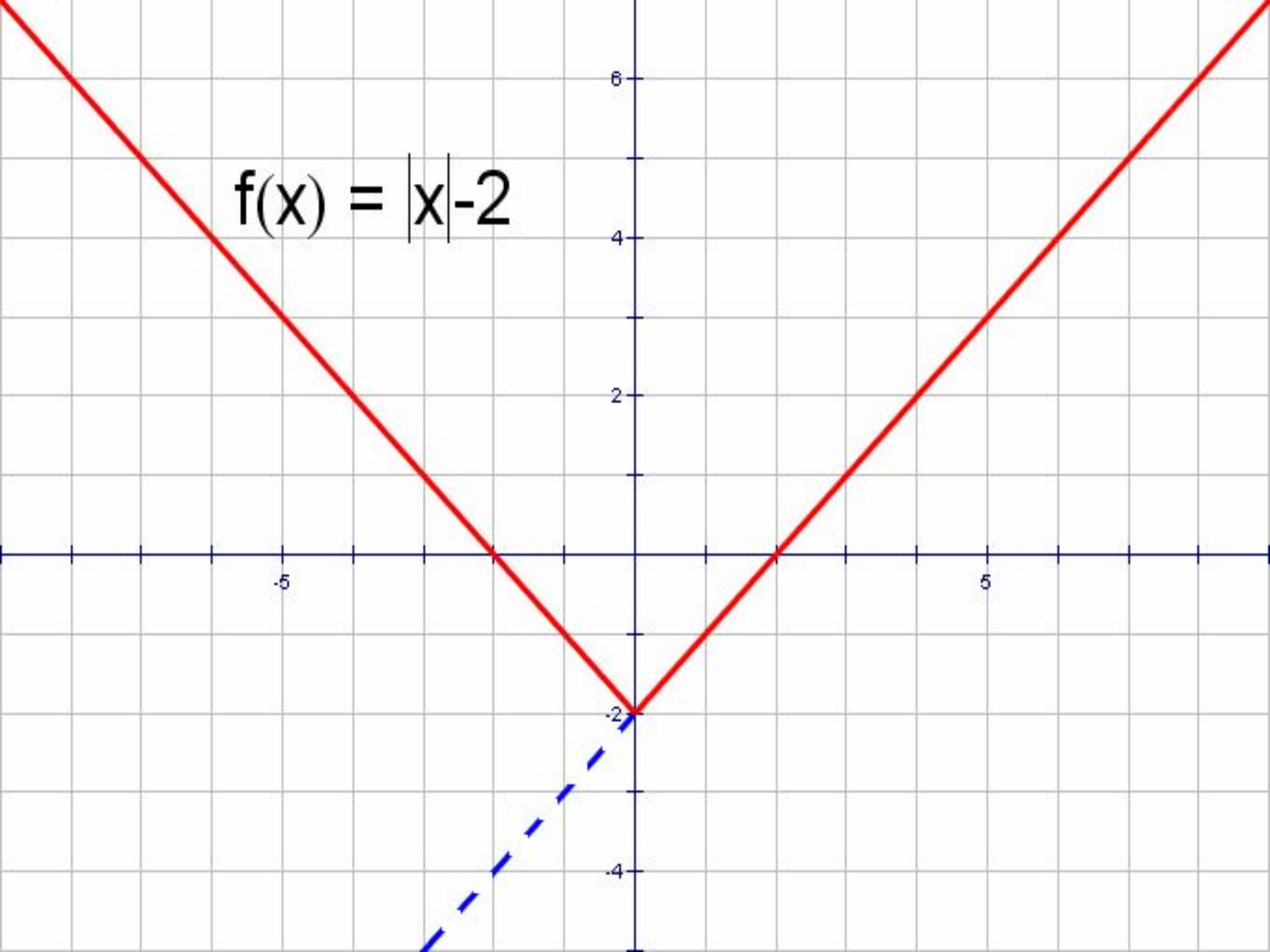

f(x) = |x-2|
6
4
2
-2
-4
-5
5

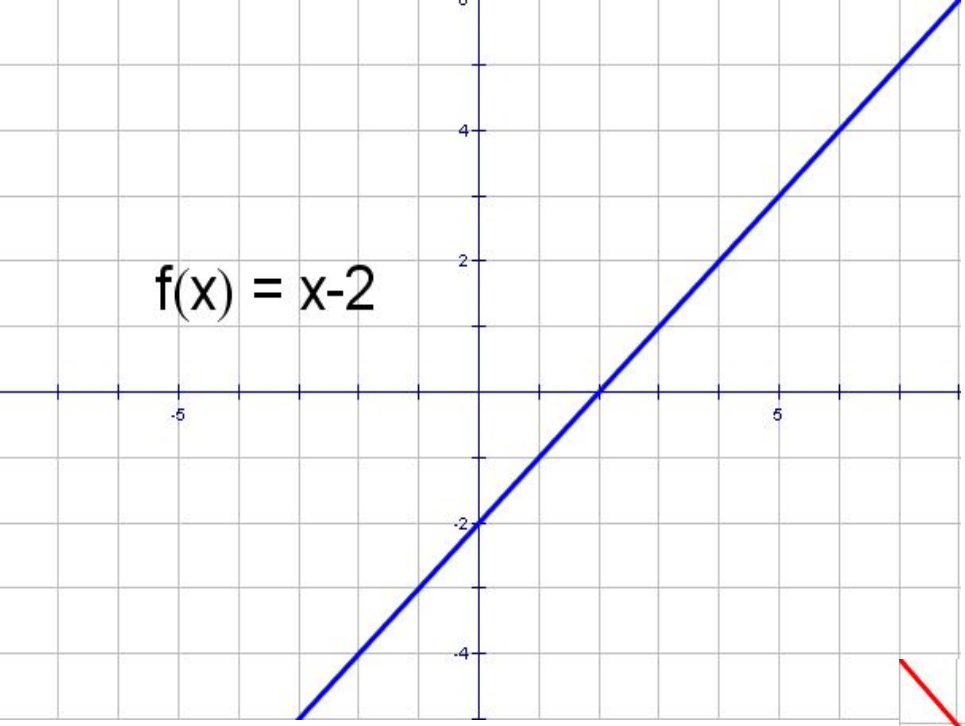

f(x) = x-2
-5
5
2
-2
-4

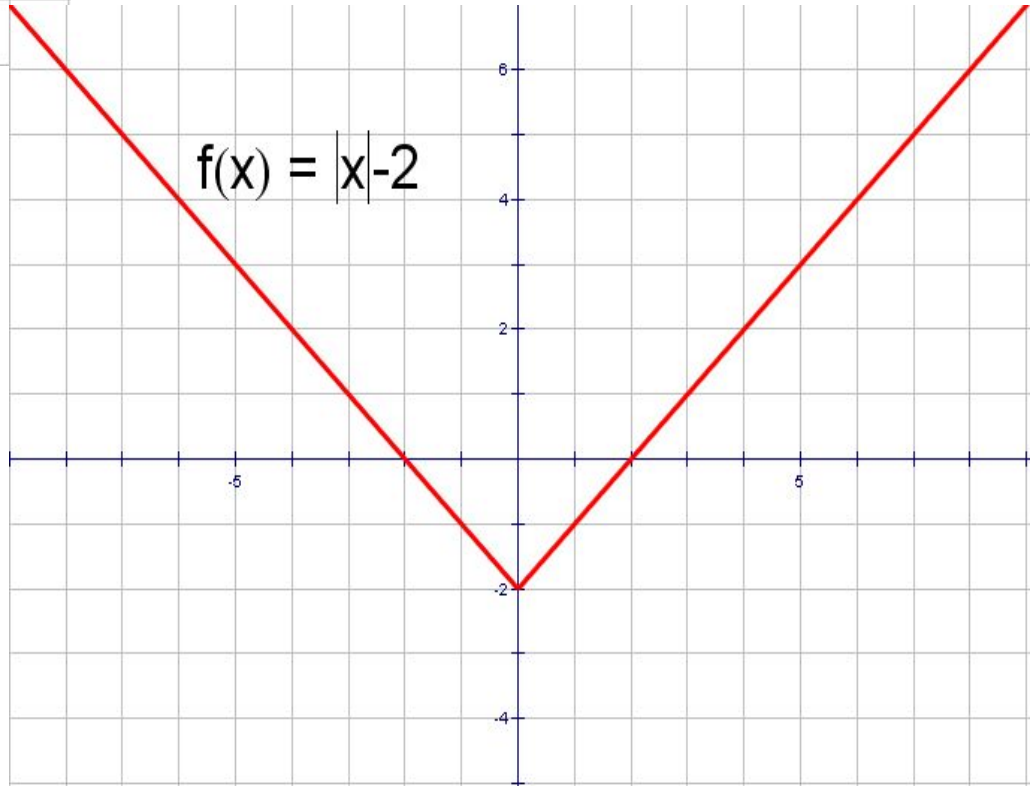

f(x) = |x-2|
6
4
2
-2
-4
-5
5

$y = x - 2$ и $y = |x| - 2$

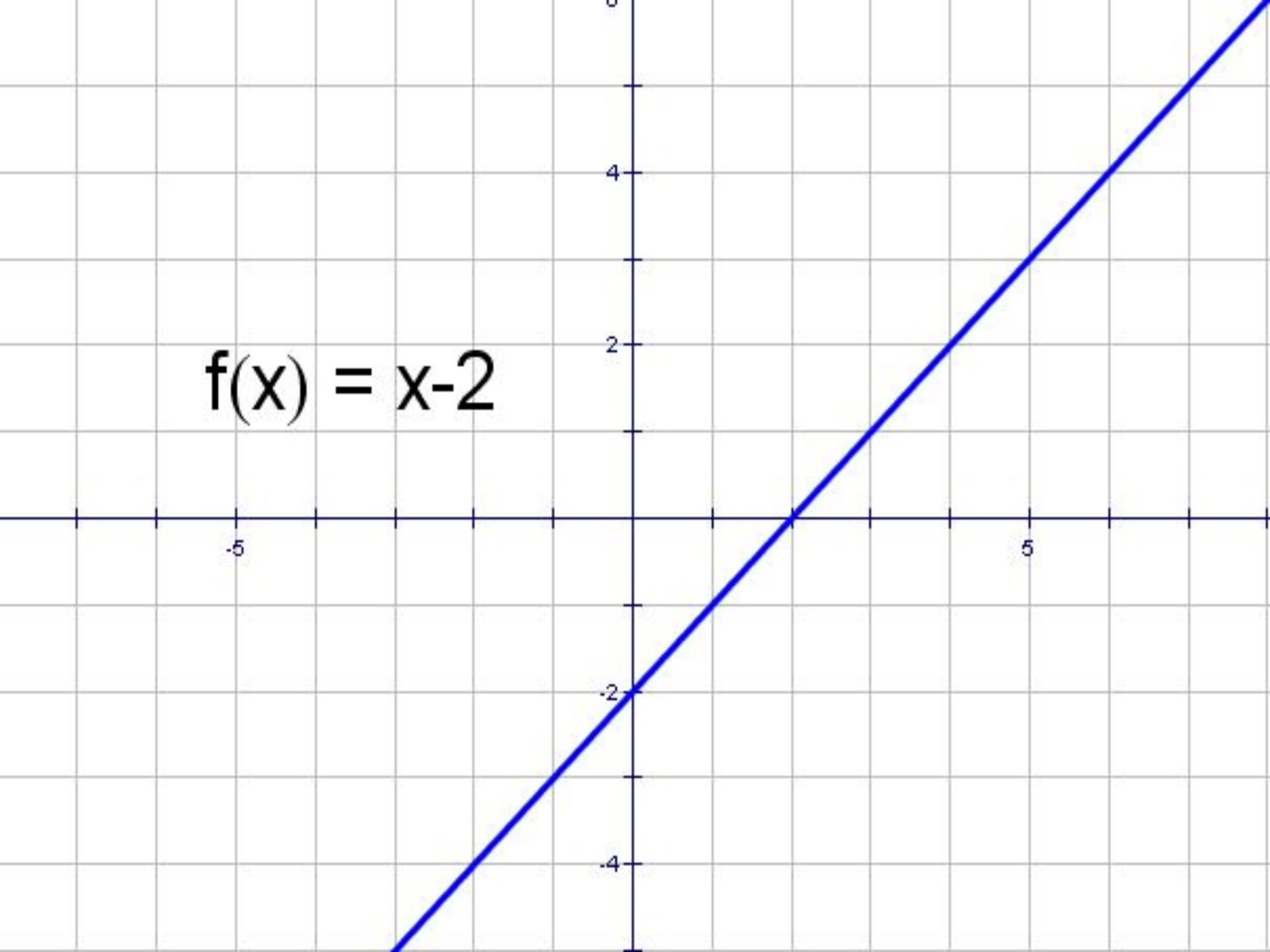

f(x) = x-2
4
2
-2
-4
-5
5

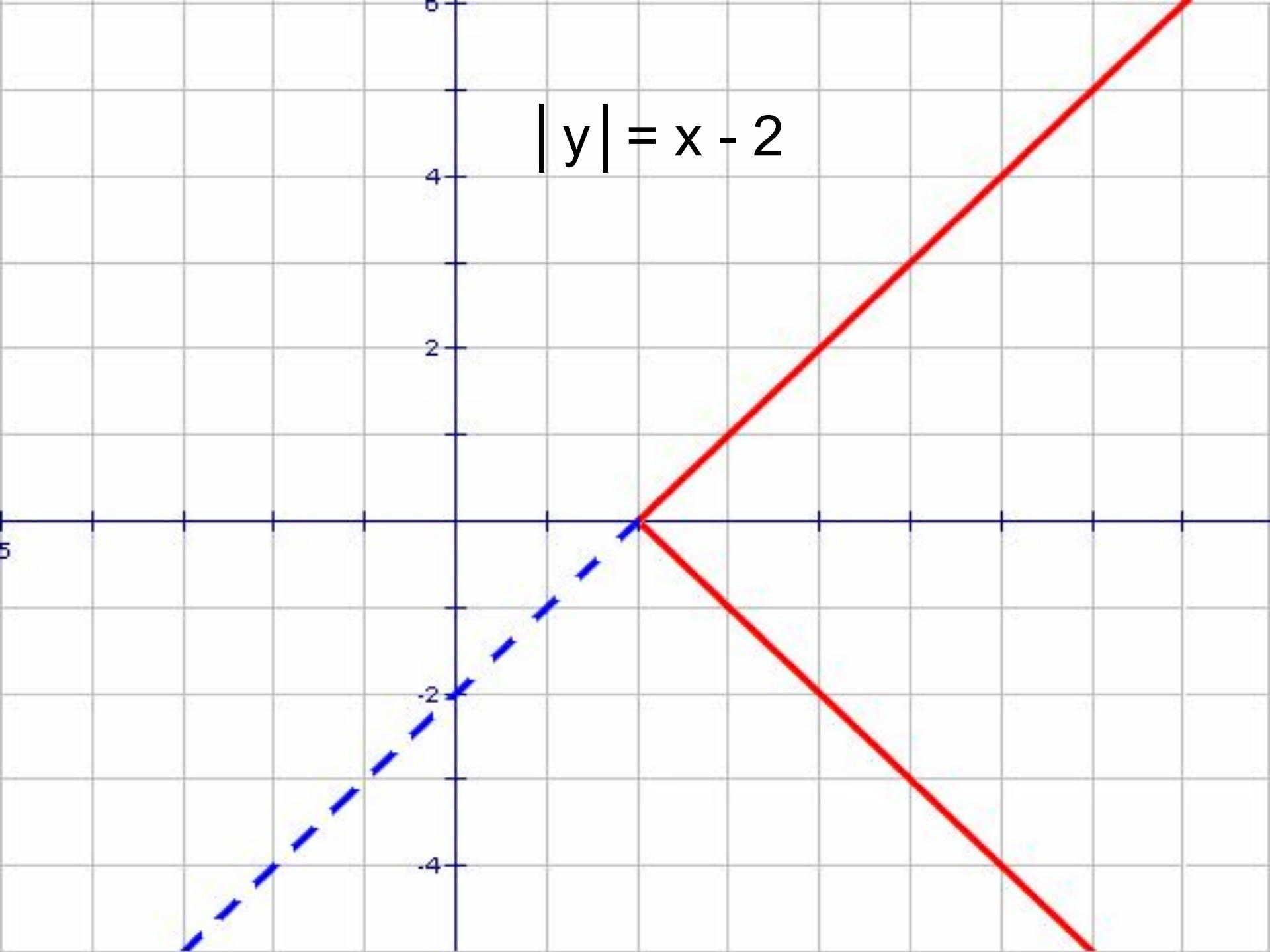

f(x) = |x|-2
6
4
2
-2
-4
-5
5

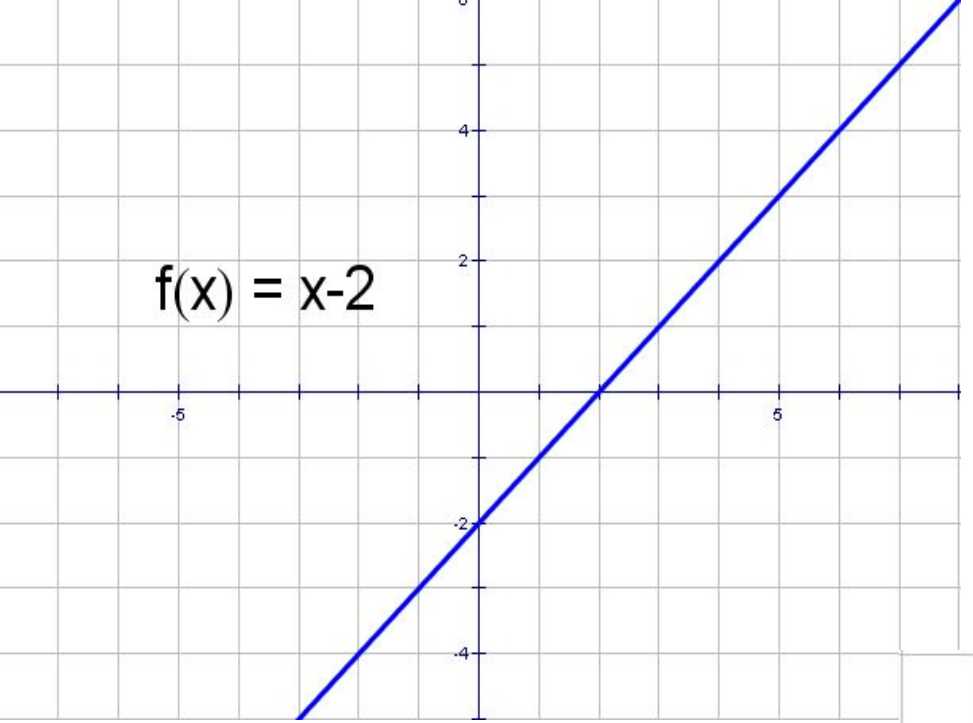

f(x) = x-2
-5
5
4
2
-2
-4

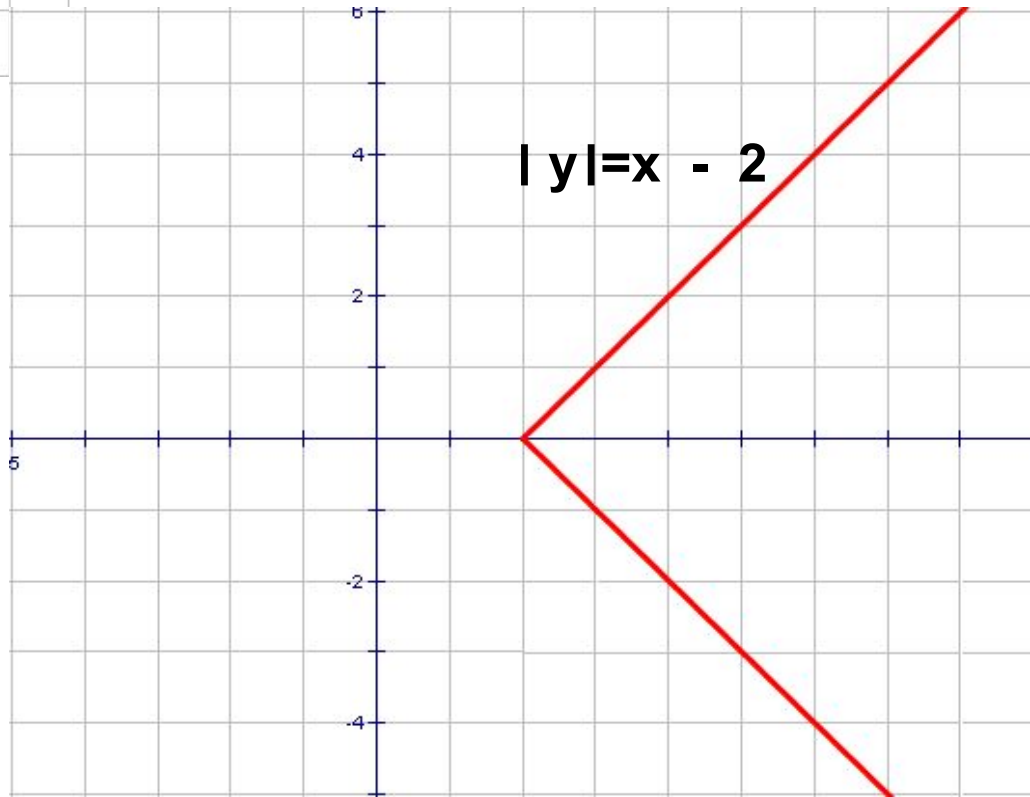

f(x) = |x|-2
6
4
2
-5
5
-2
-4

$y = x - 2$ и $|y| = x - 2$


f(x) = x-2
4
2
-2
-4
-5
5


|y| = x - 2
6
4
2
-2
-4
5

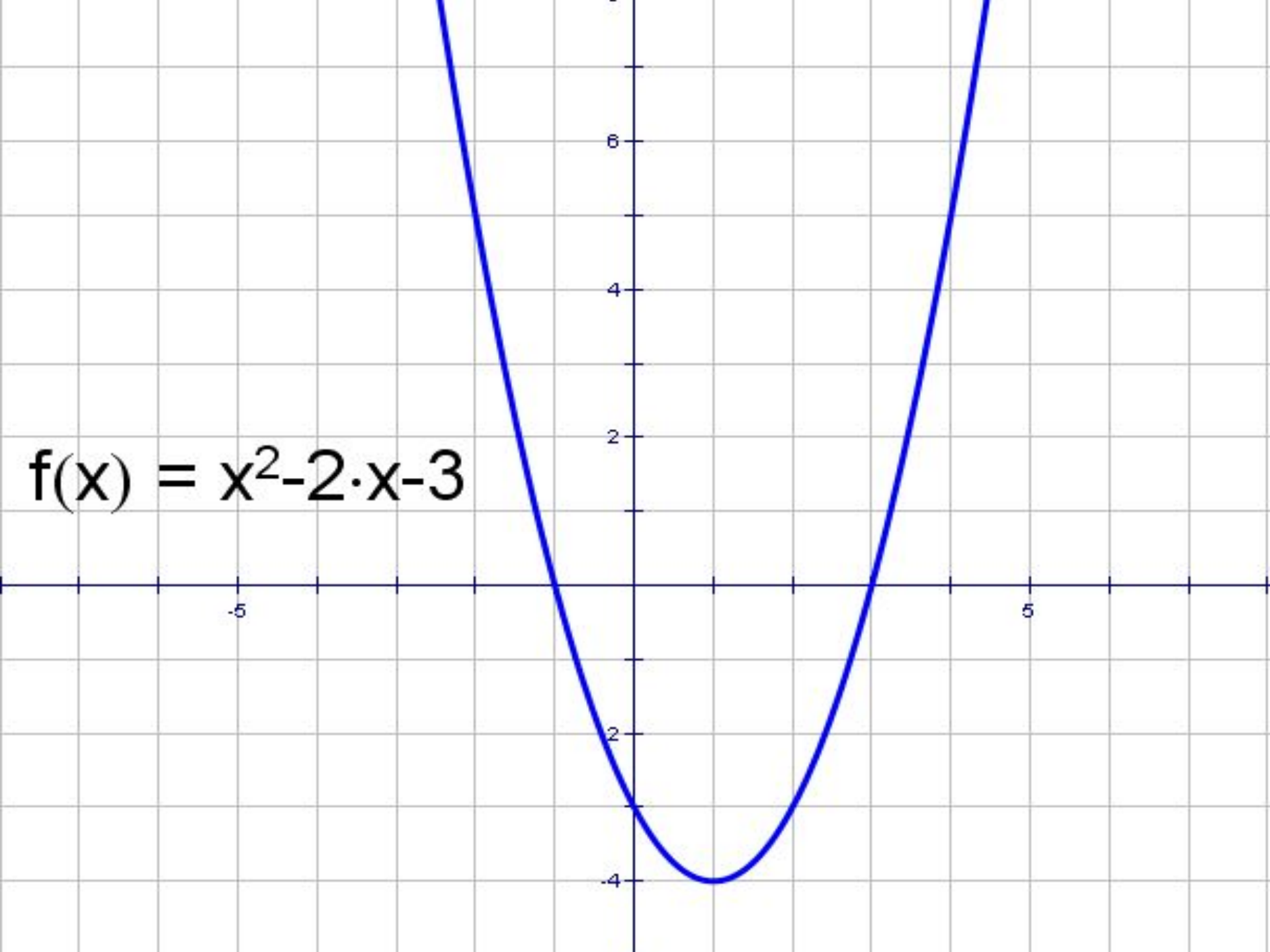

f(x) = x-2
-5
5
4
2
-2
-4

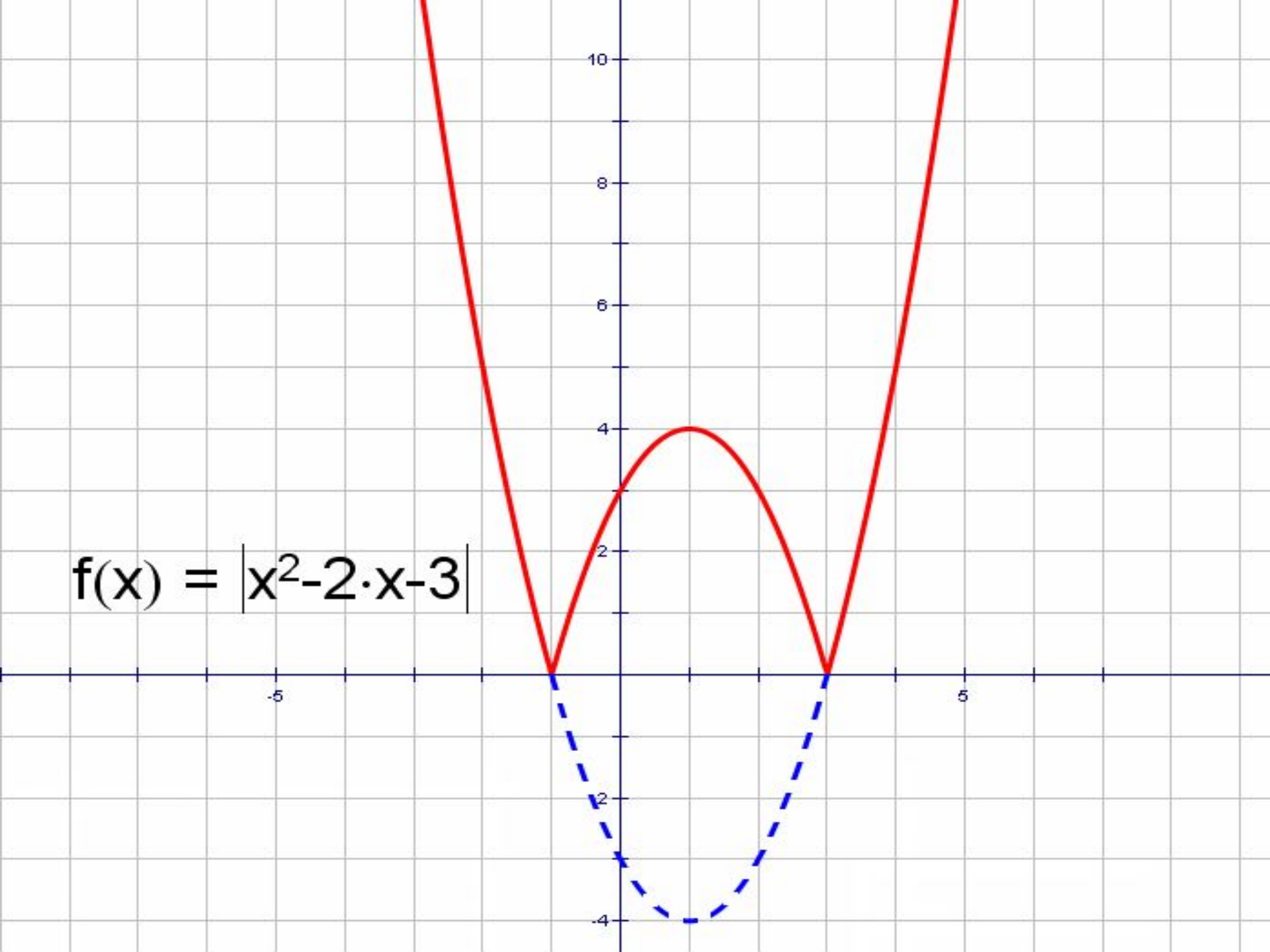

| y |=x - 2
5
4
2
-2
-4

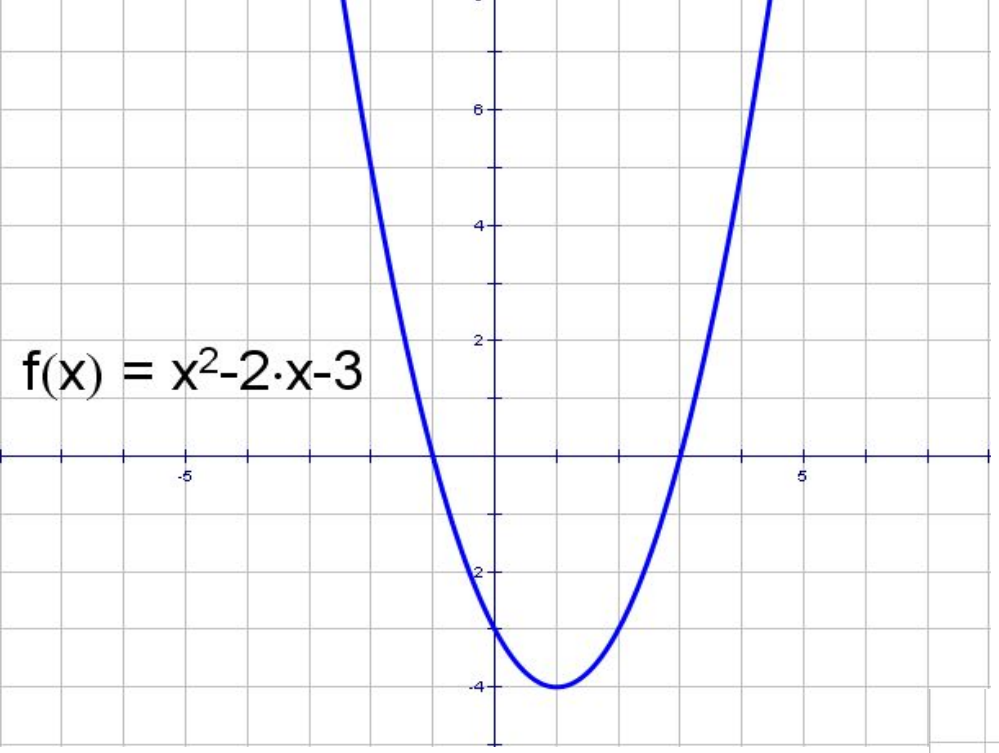
$$y = x^2 - 2x - 3$$

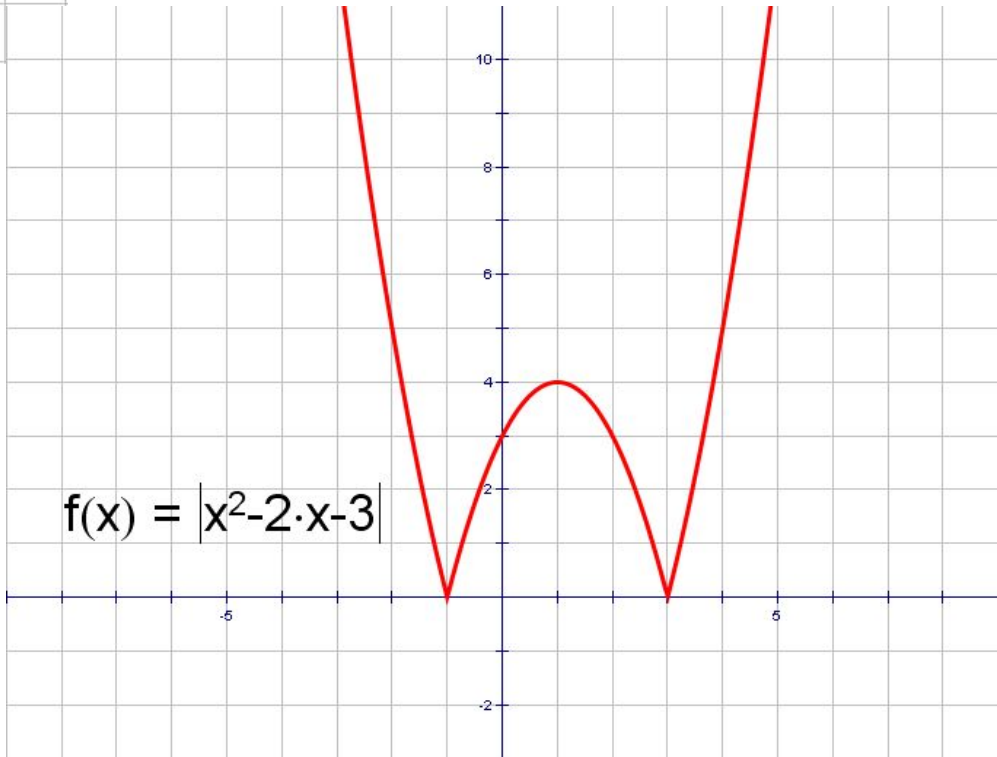
и

$$y = |x^2 - 2x - 3|$$


f(x) = x²-2·x-3
6
4
2
-5
5
2
-4


f(x) = |x²-2·x-3|
10
8
6
4
2
-2
-4
-5
5

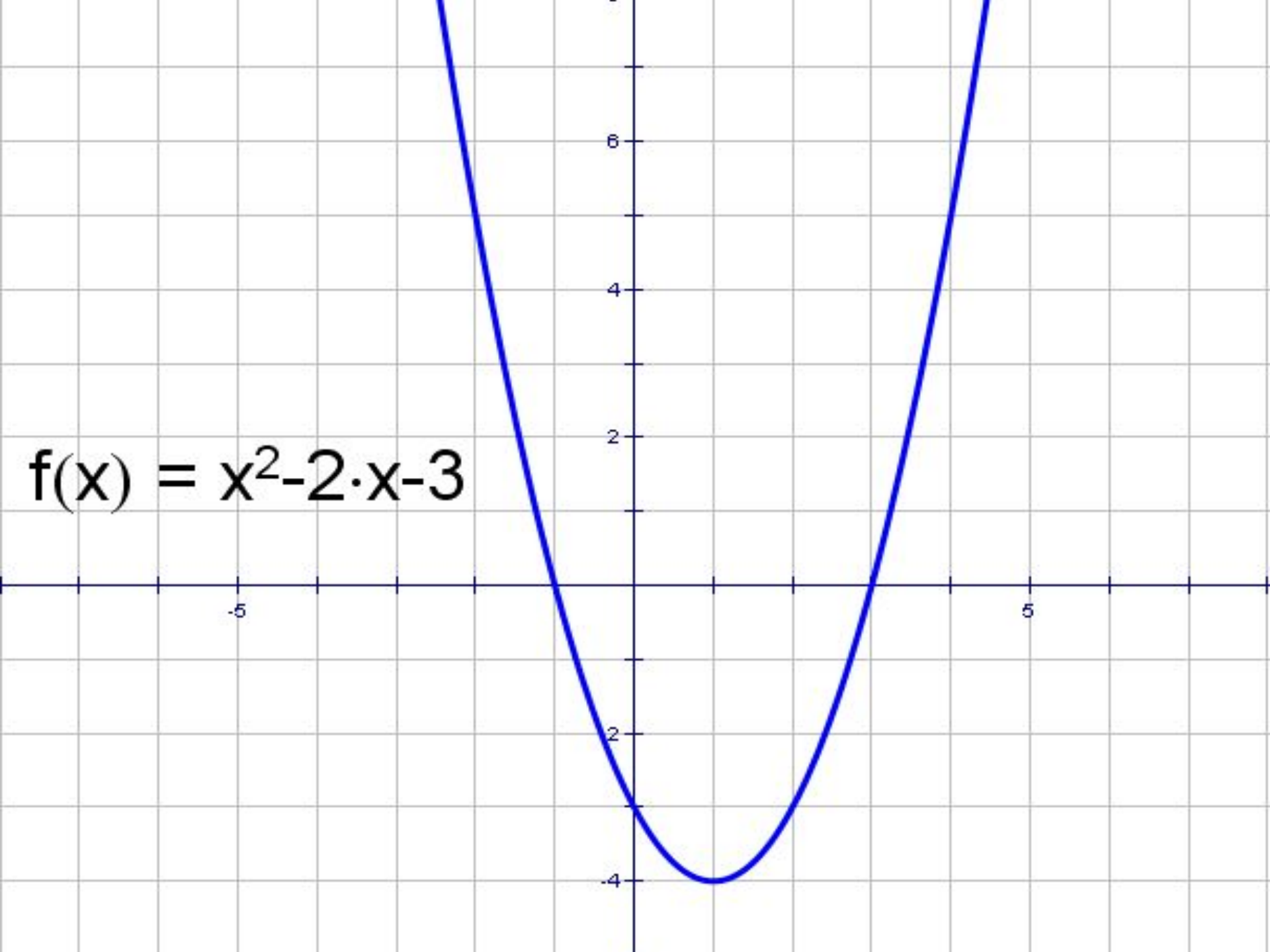

f(x) = x²-2·x-3
6
4
2
-2
-4
-5
5

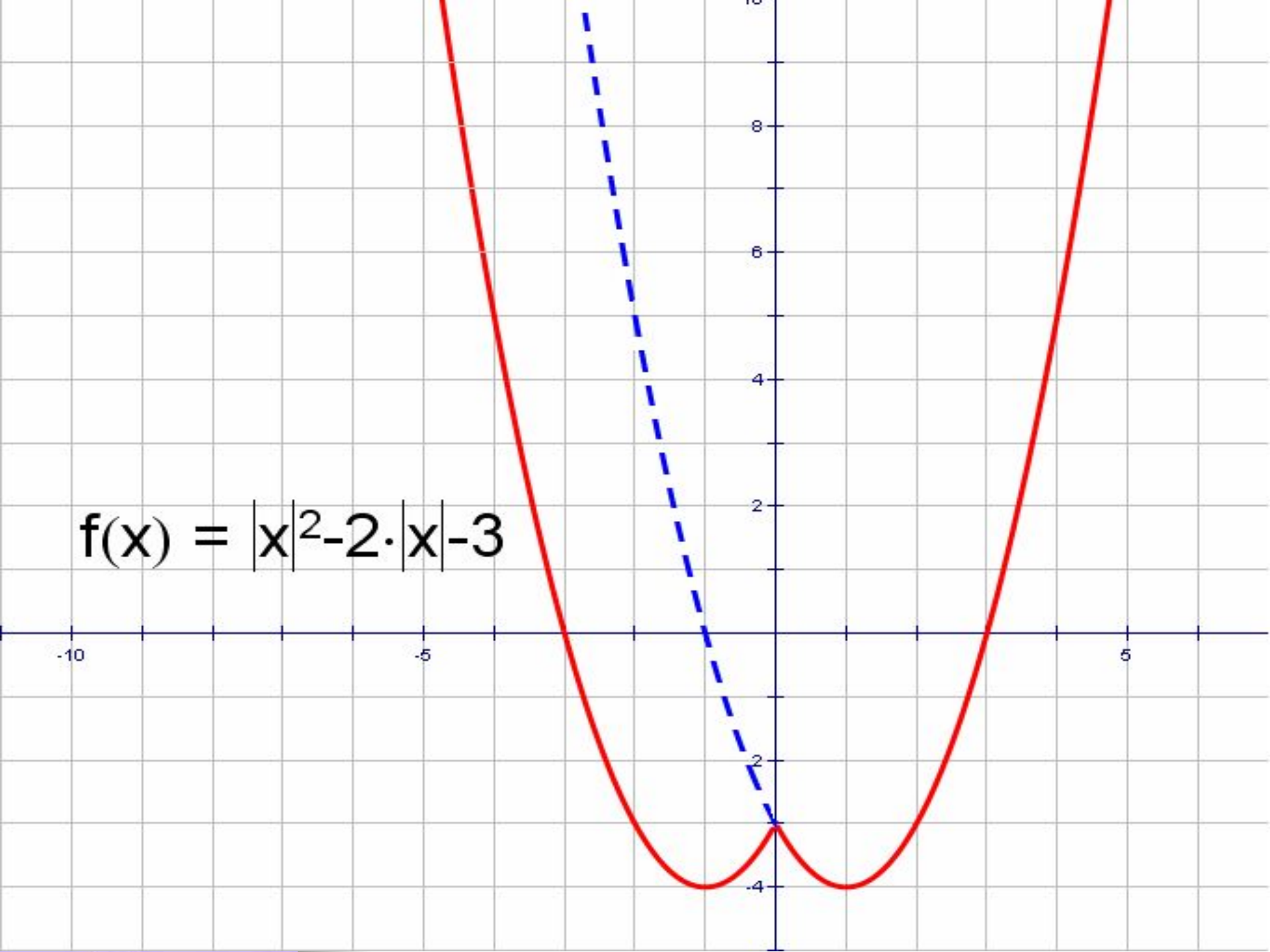

f(x) = |x²-2·x-3|
10
8
6
4
2
-2
-5
5

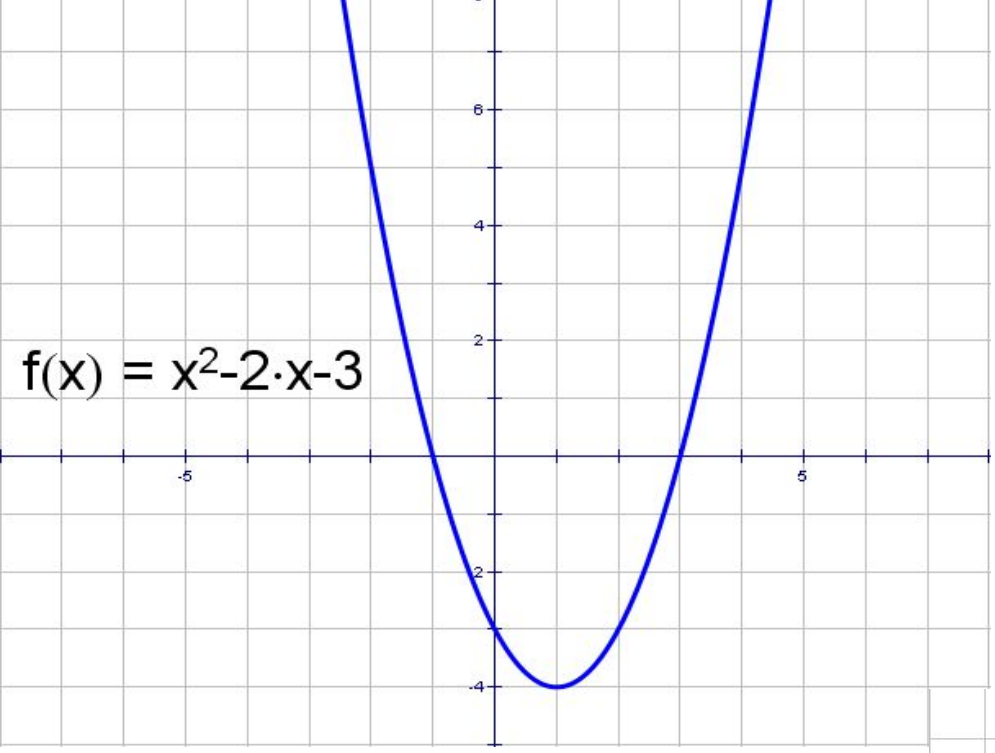
$$y = x^2 - 2x - 3$$

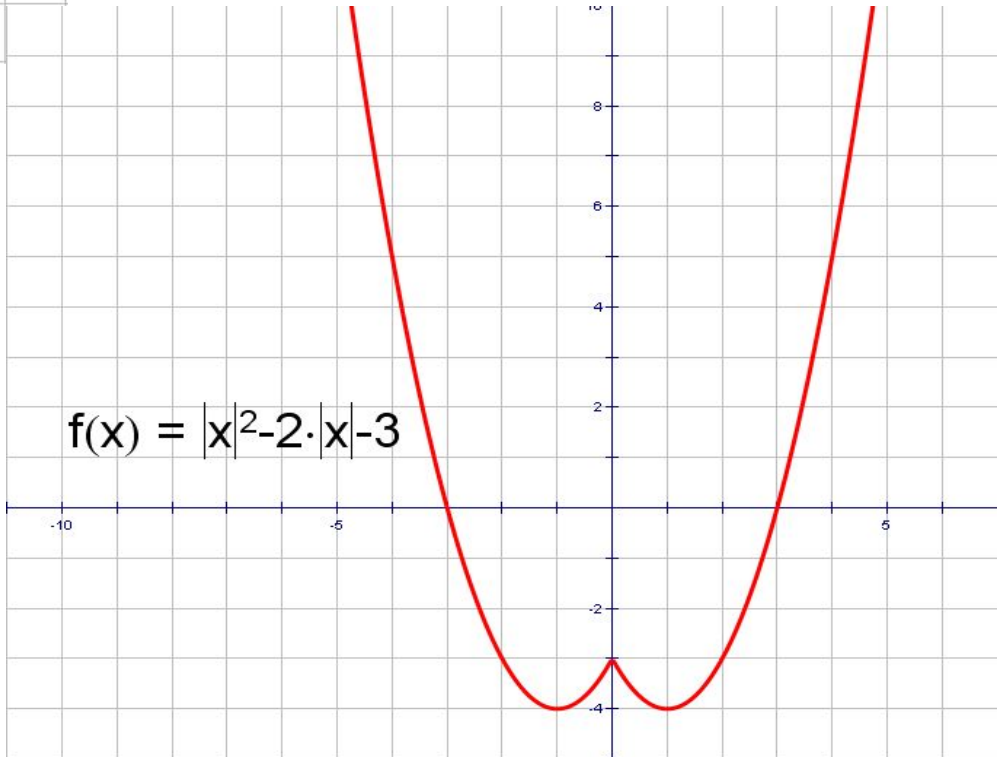
и

$$y = |x|^2 - 2|x| - 3$$


f(x) = x²-2·x-3
6
4
2
-5
5
2
-4


f(x) = |x|²-2·|x|-3
-10
-5
5
8
6
4
2
-2
-4

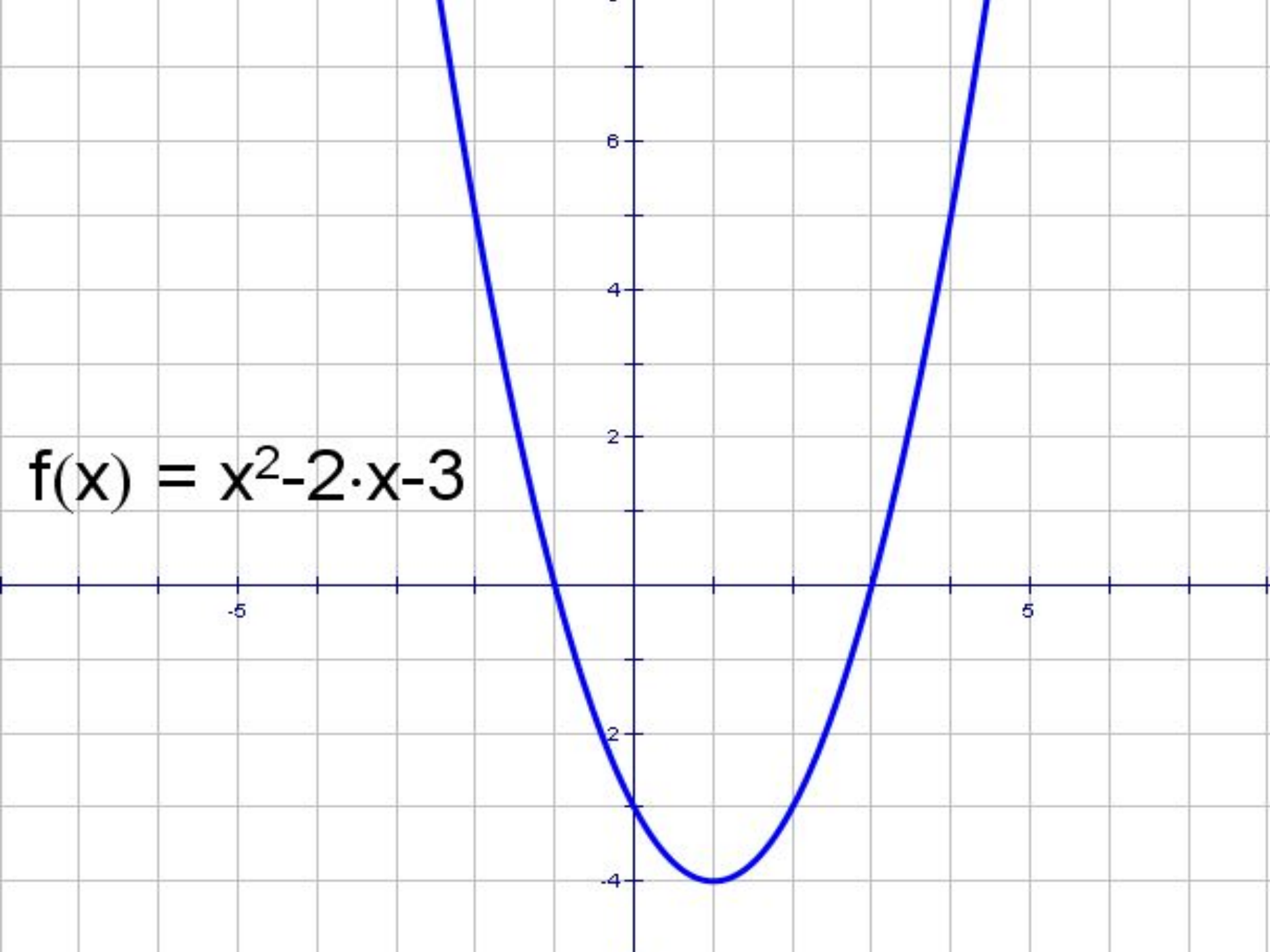

f(x) = x²-2·x-3
6
4
2
-4
-5
5


f(x) = |x|²-2·|x|-3
8
6
4
2
-2
-4
-10
-5
5

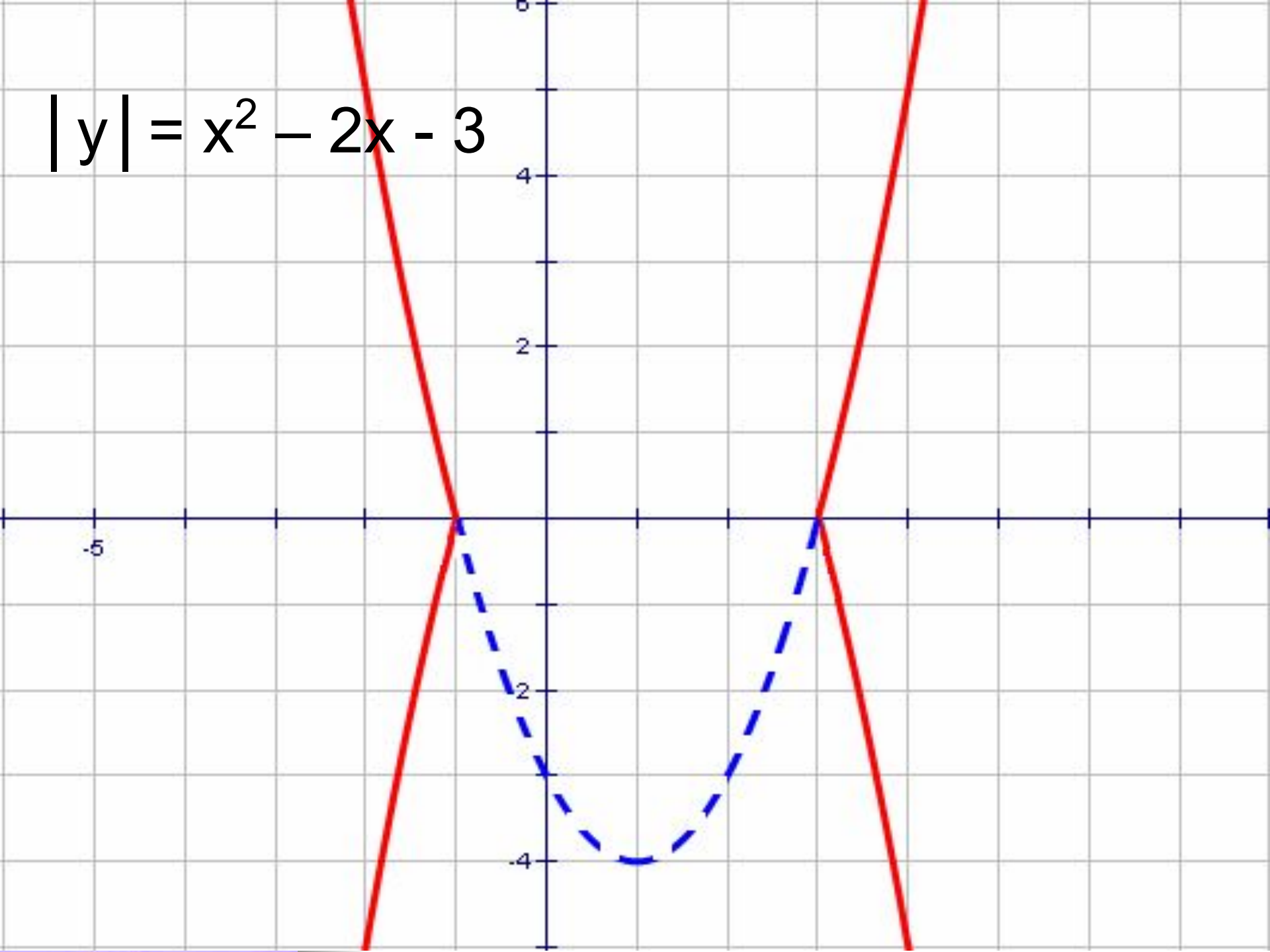
$$y = x^2 - 2x - 3$$

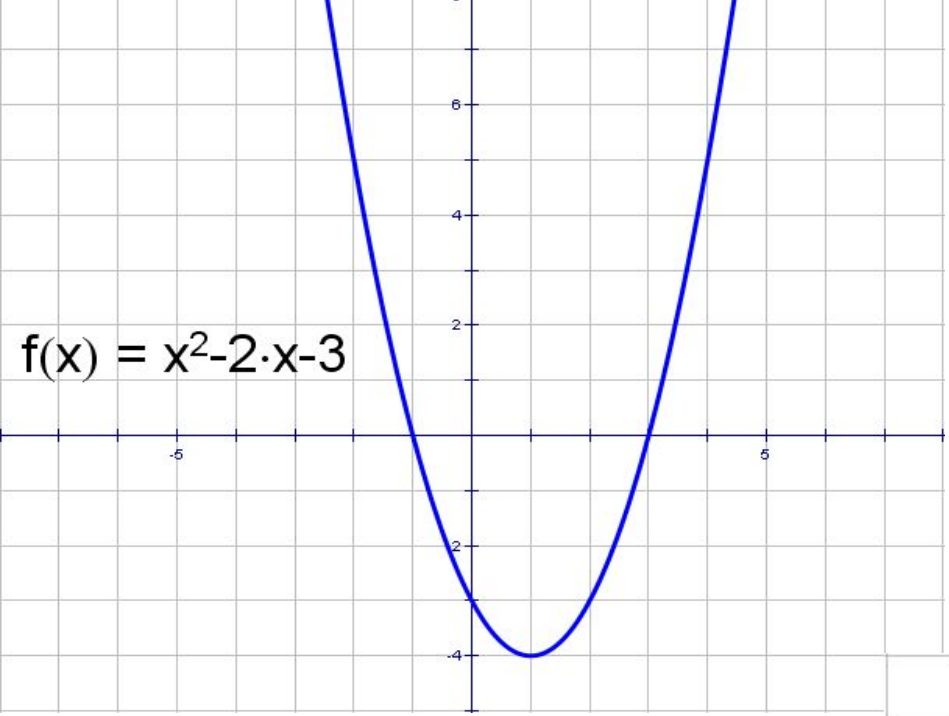
и

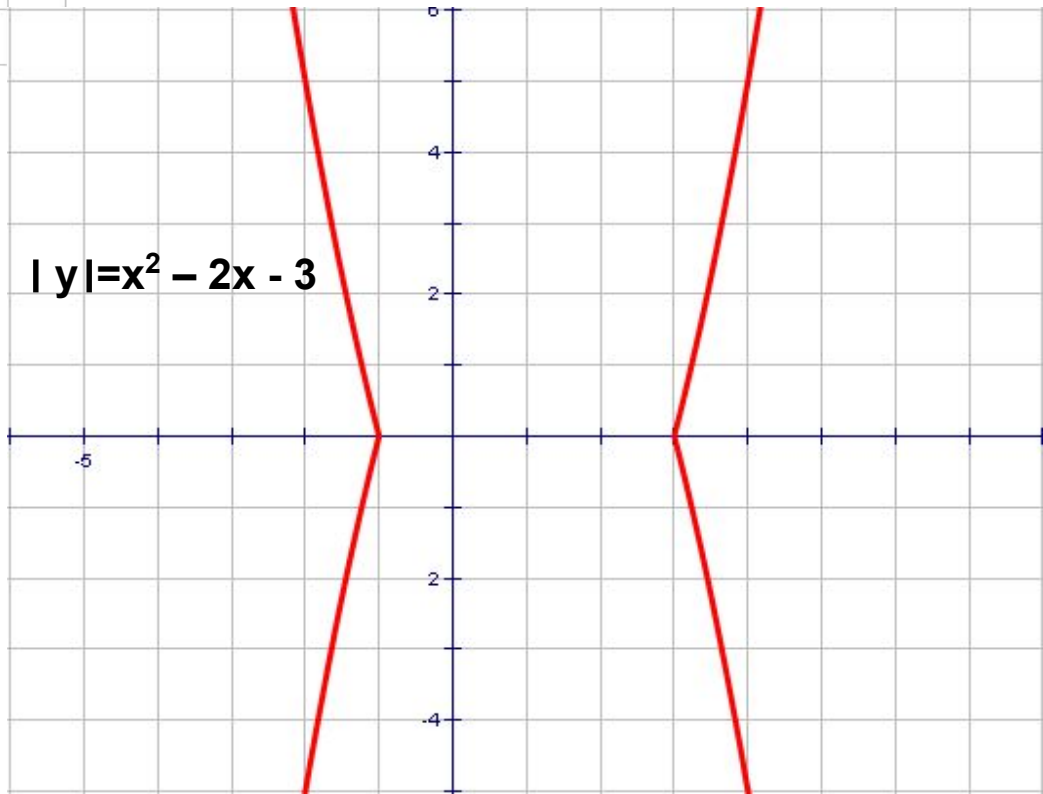
$$|y| = x^2 - 2x - 3$$


f(x) = x²-2·x-3
6
4
2
-5
5
2
-4

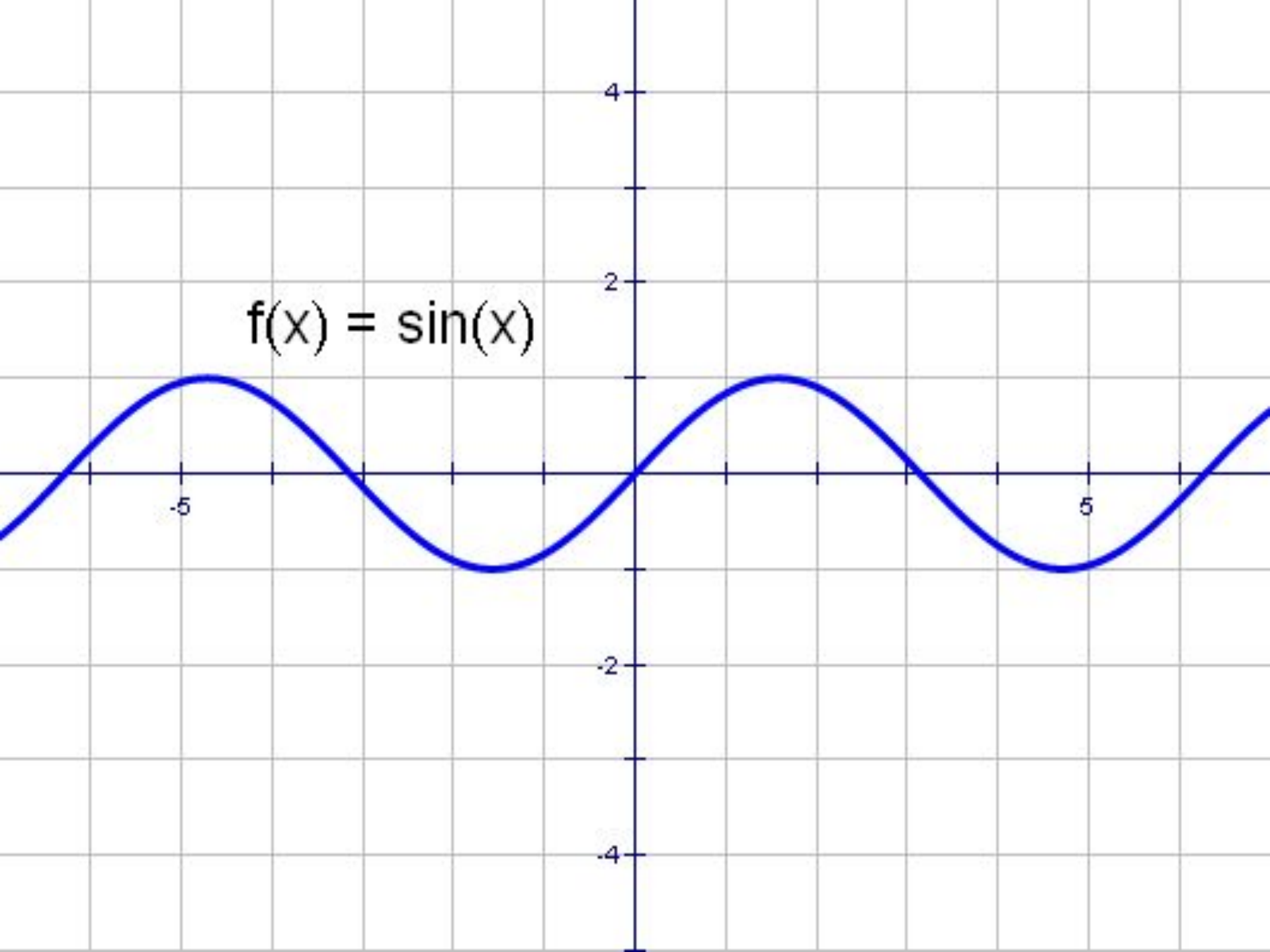
$|y| = x^2 - 2x - 3$

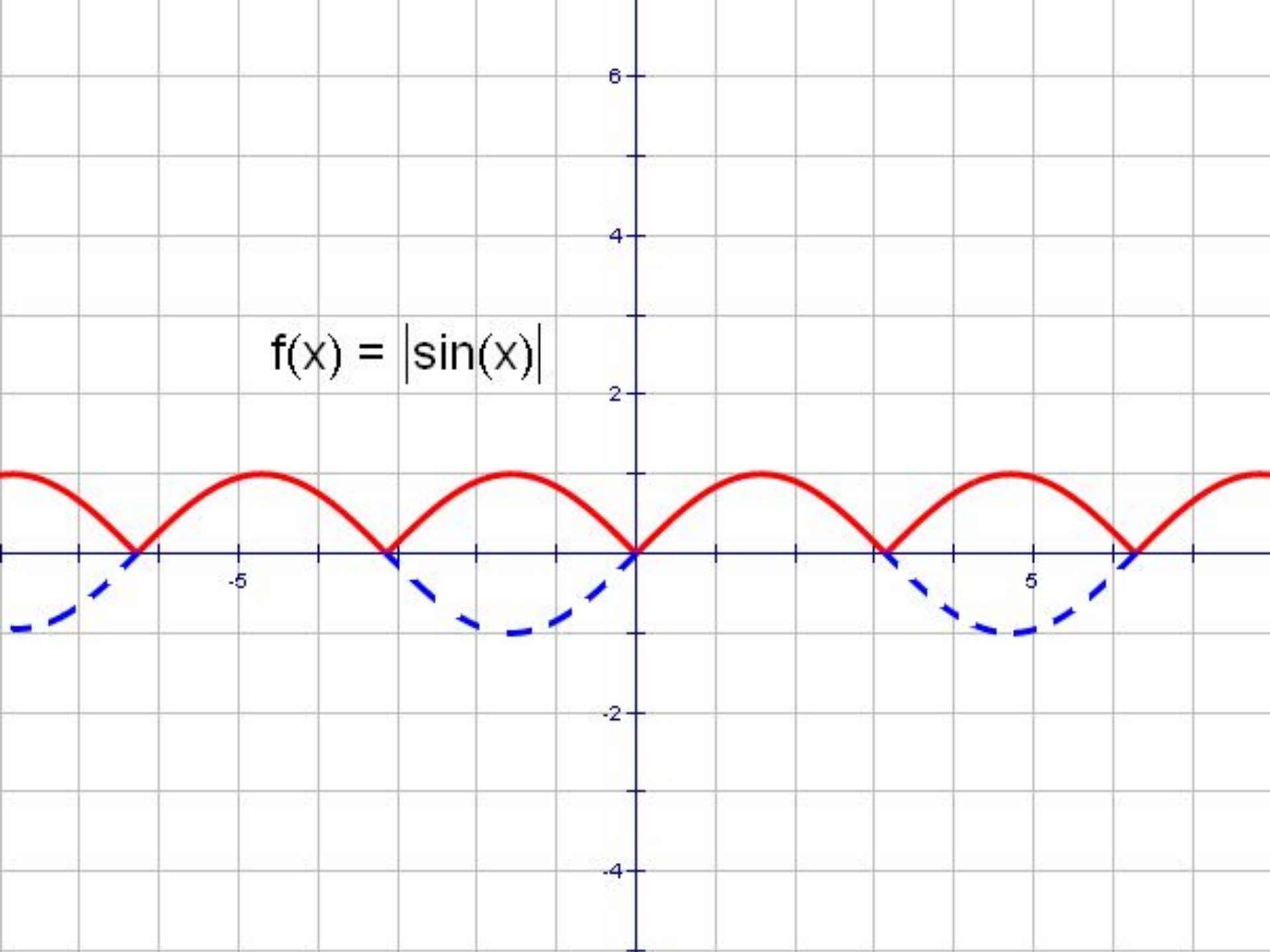


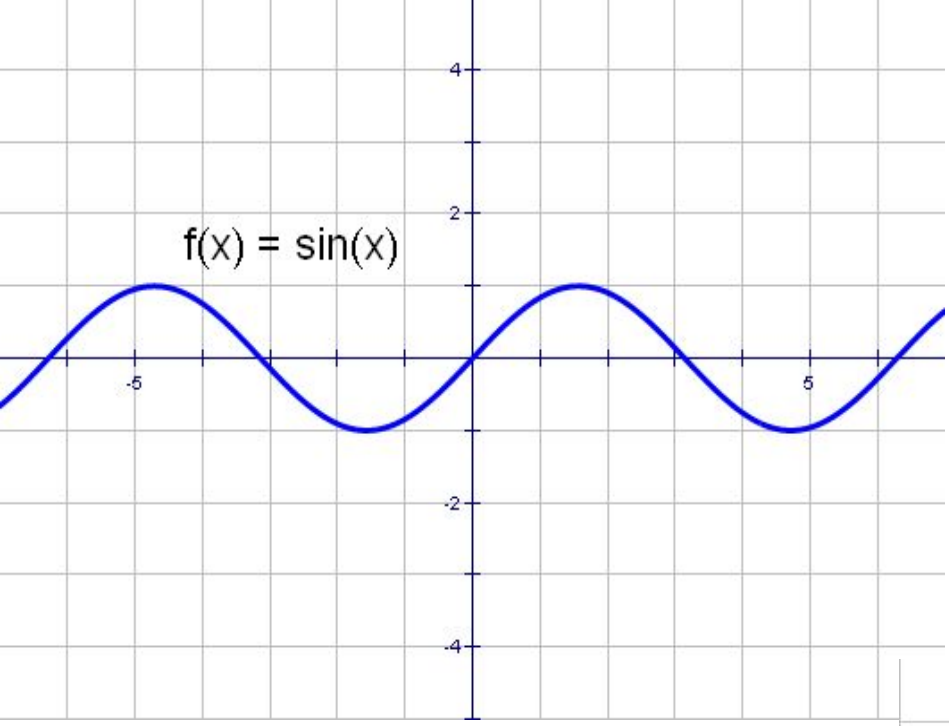

f(x) = x²-2·x-3
6
4
2
-5
5
-2
-4

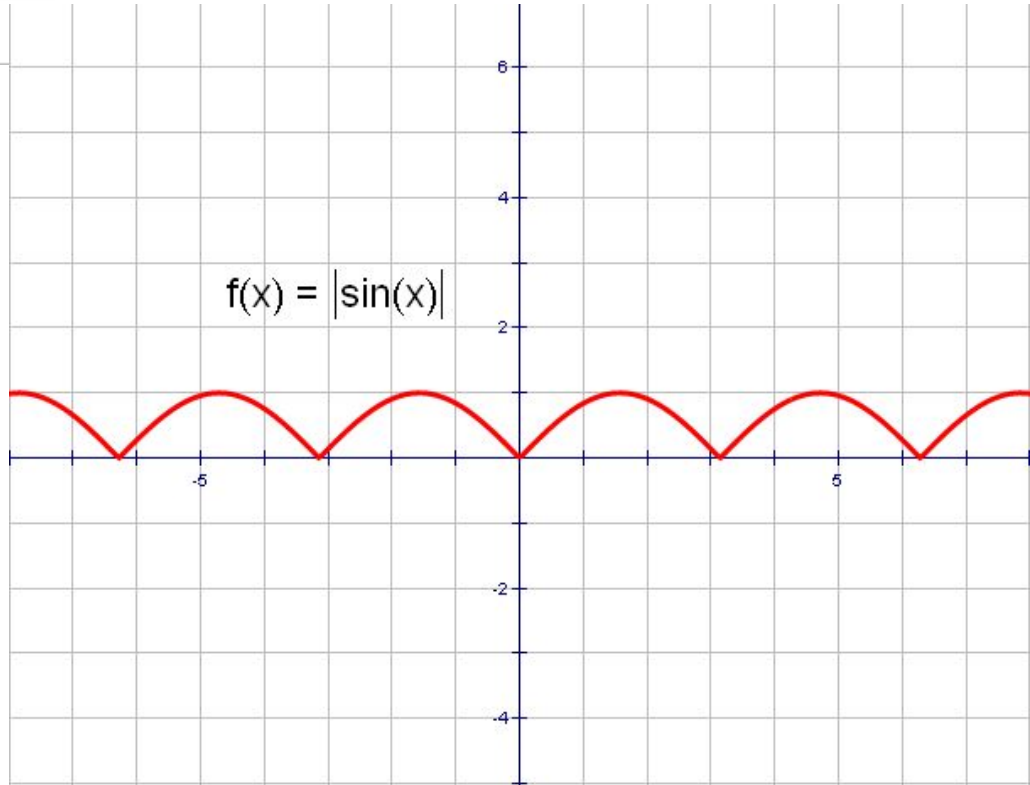

| y |=x² – 2x - 3
6
4
2
-5
2
-4

$y = \sin x$ и $y = |\sin x|$

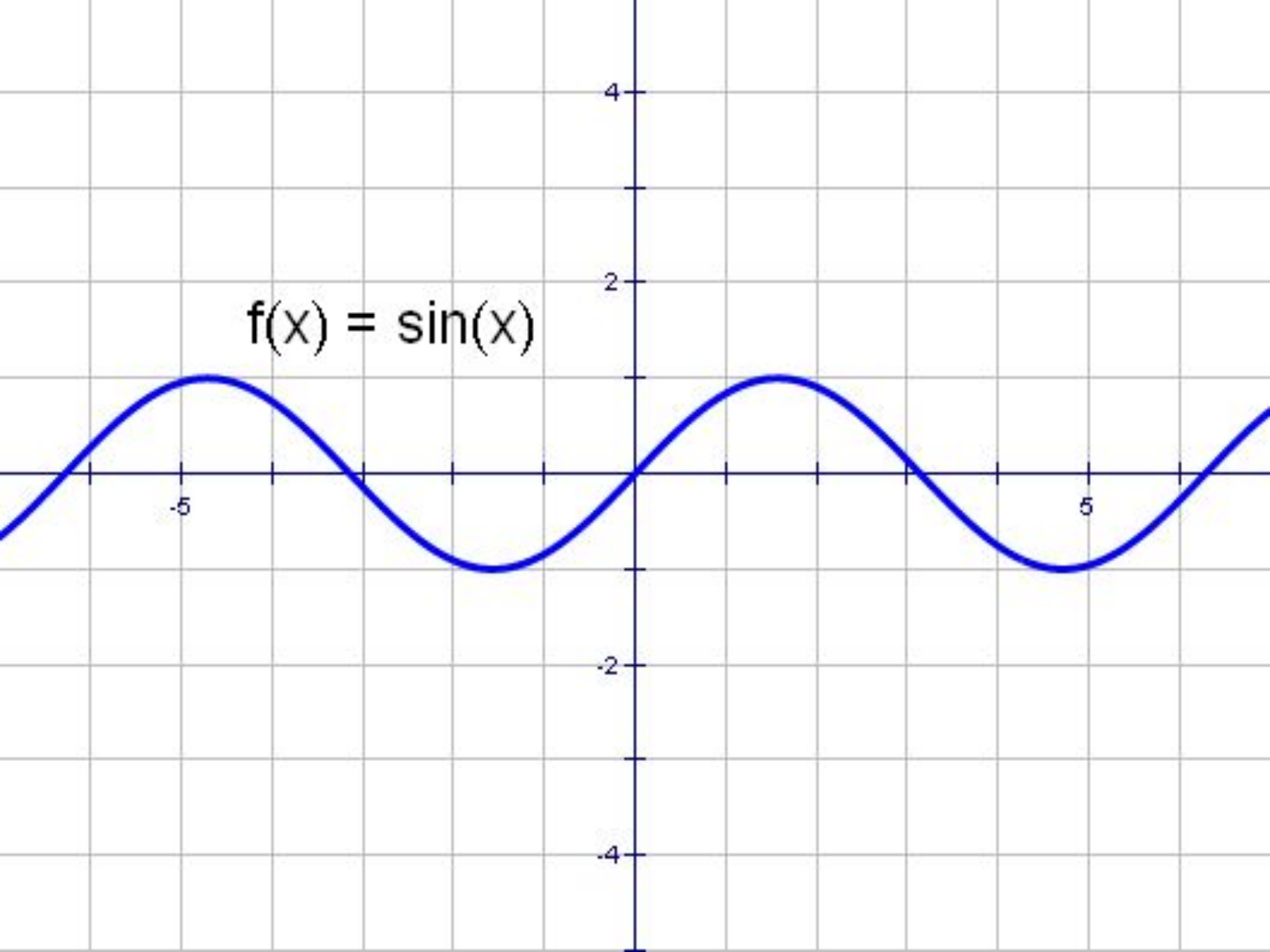

f(x) = sin(x)
4
2
-2
-4
-5
5

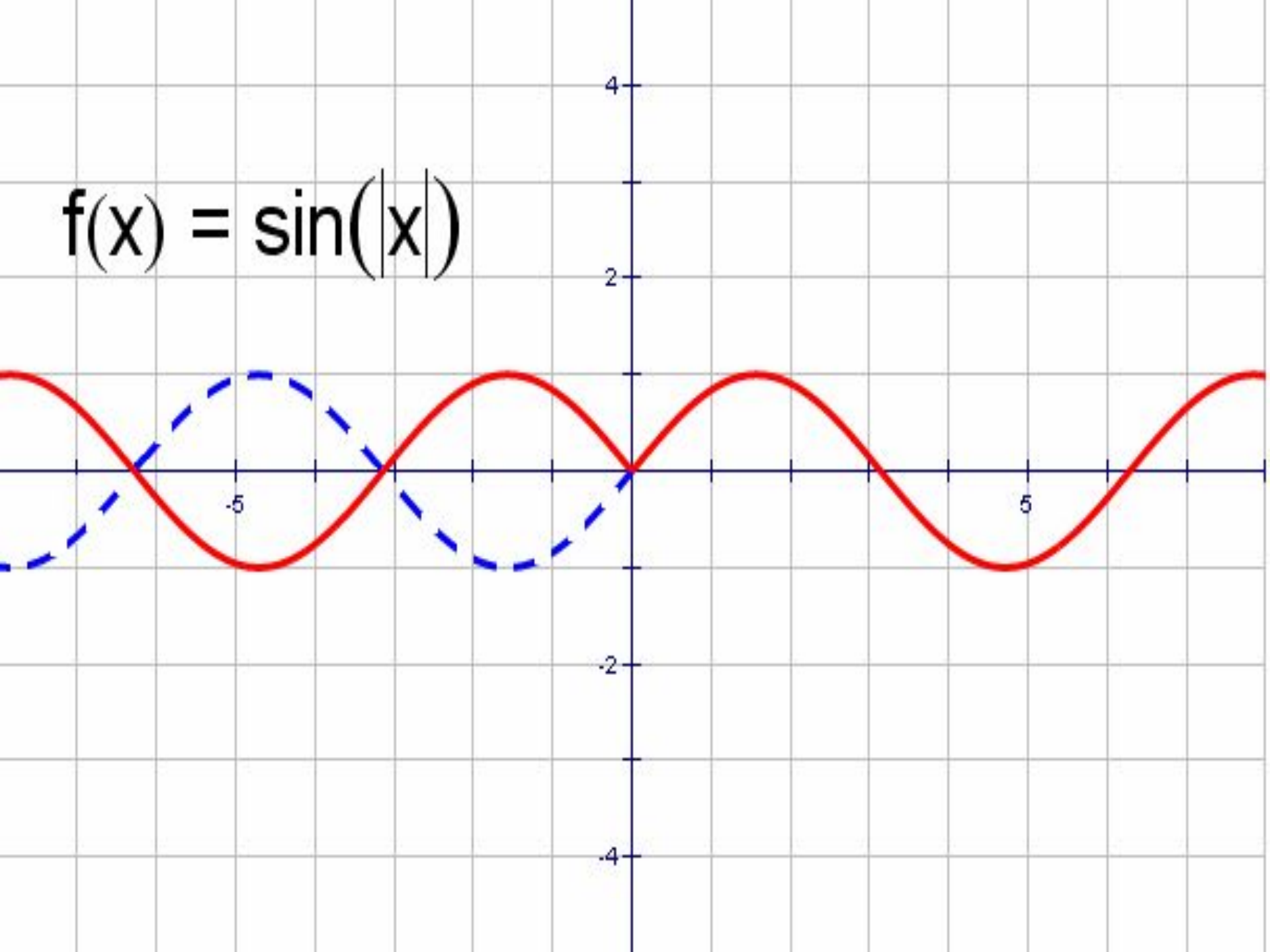

f(x) = |sin(x)|
6
4
2
-2
-4
-5
5

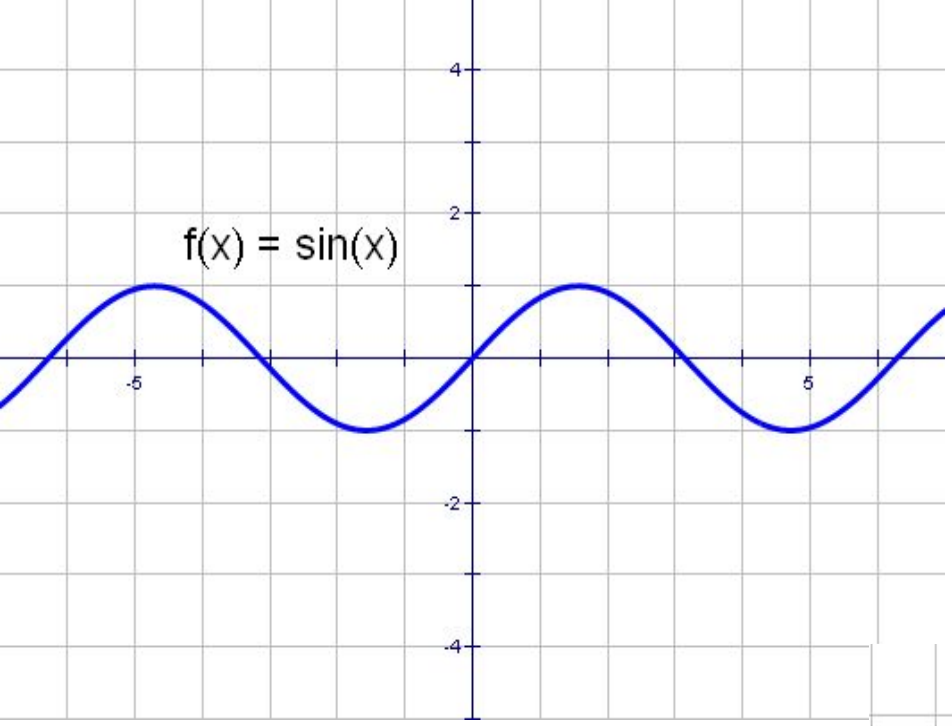

f(x) = sin(x)
4
2
-2
-4
-5
5

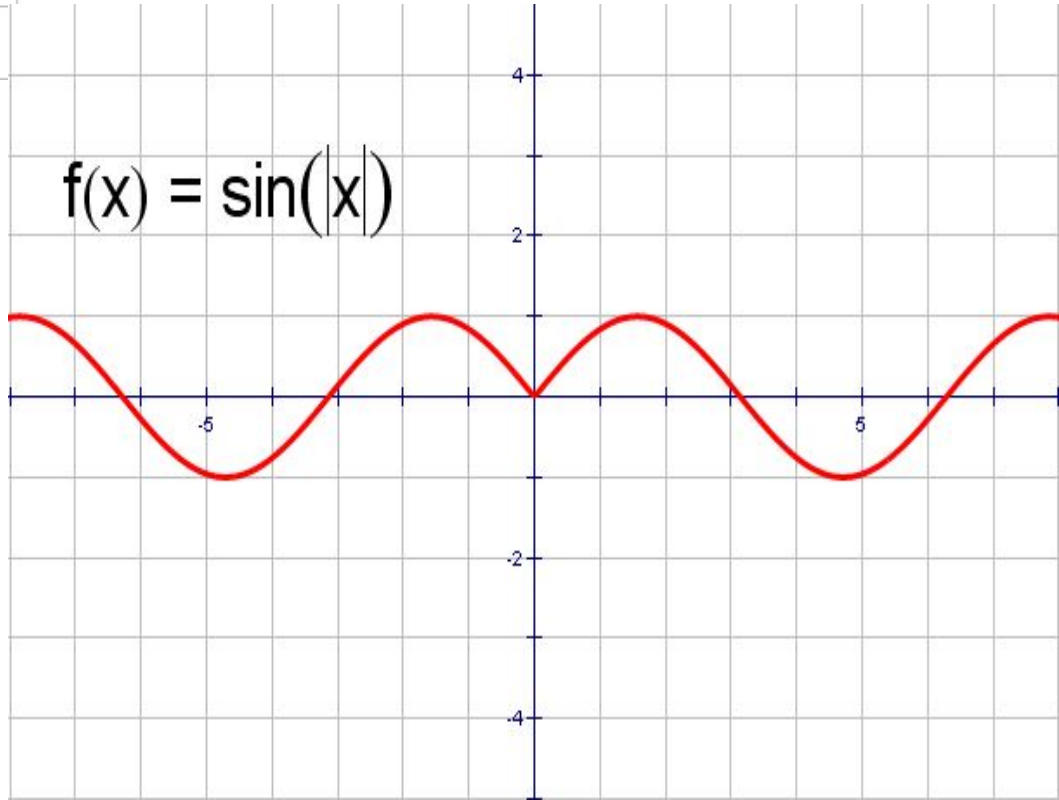

f(x) = |sin(x)|
6
4
2
-2
-4
-5
5

$y = \sin x$ и $y = \sin|x|$

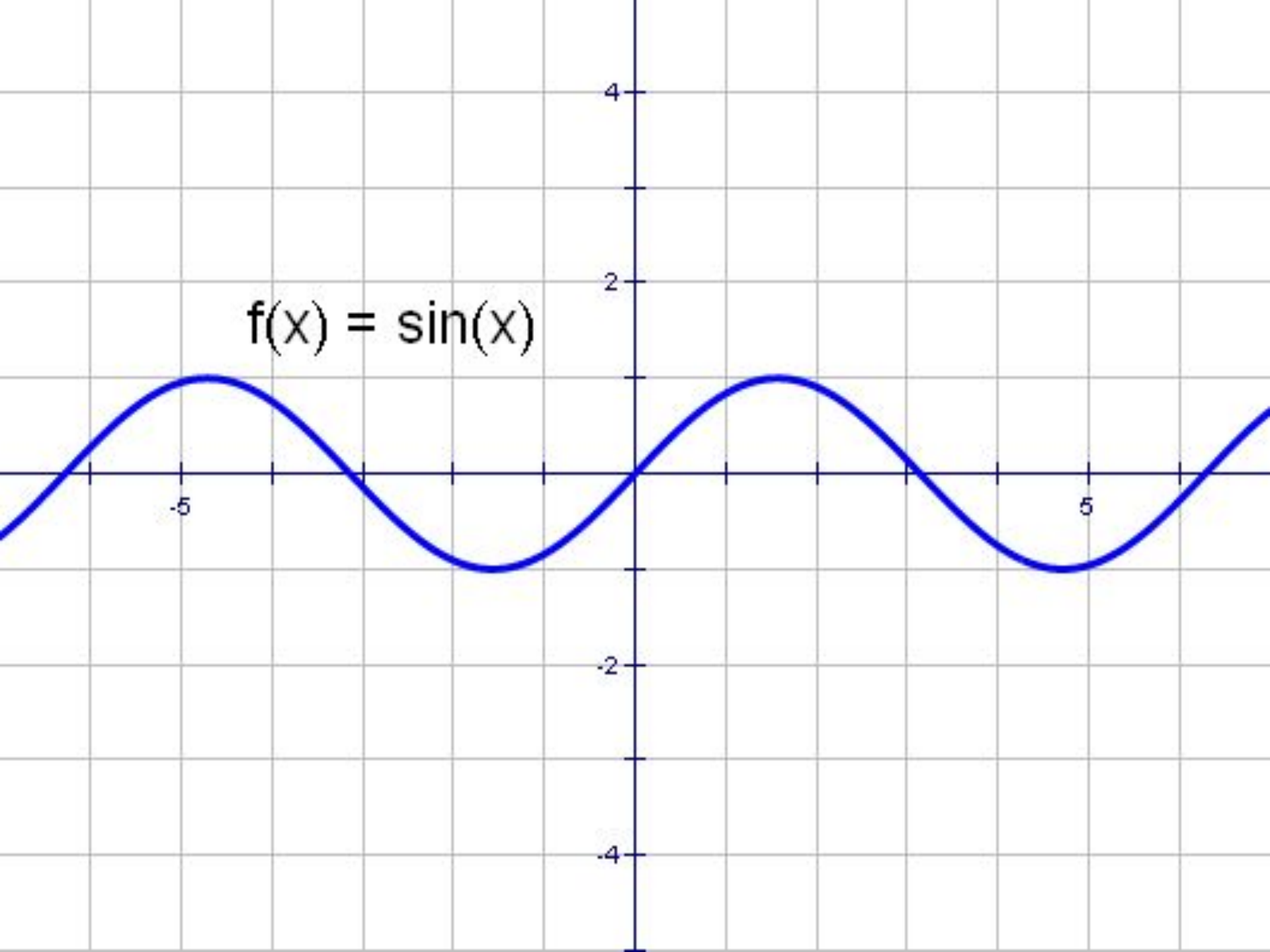

f(x) = sin(x)
4
2
-2
-4
-5
5

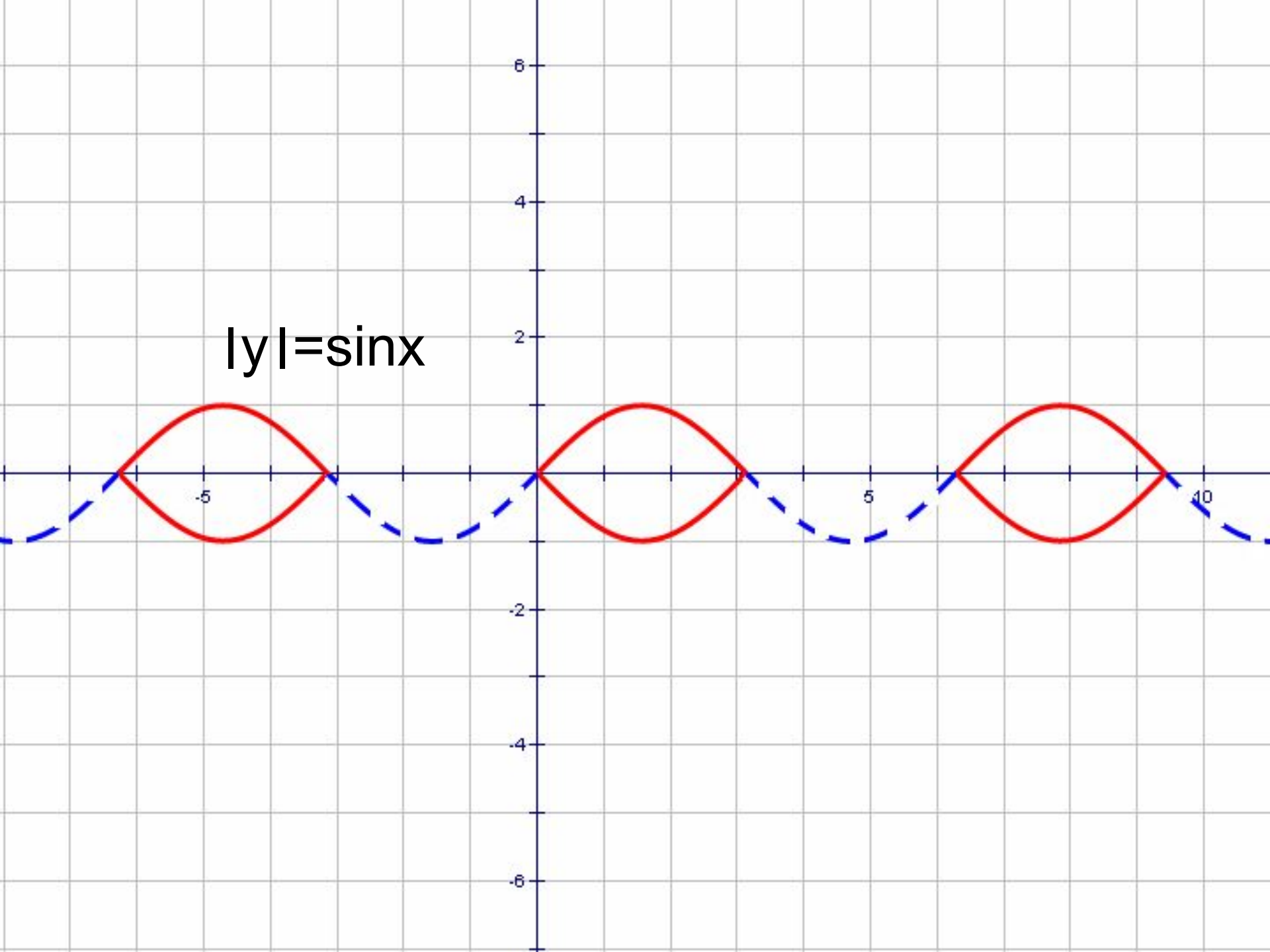

f(x) = sin(|x|)
4
2
-2
-4
-5
5

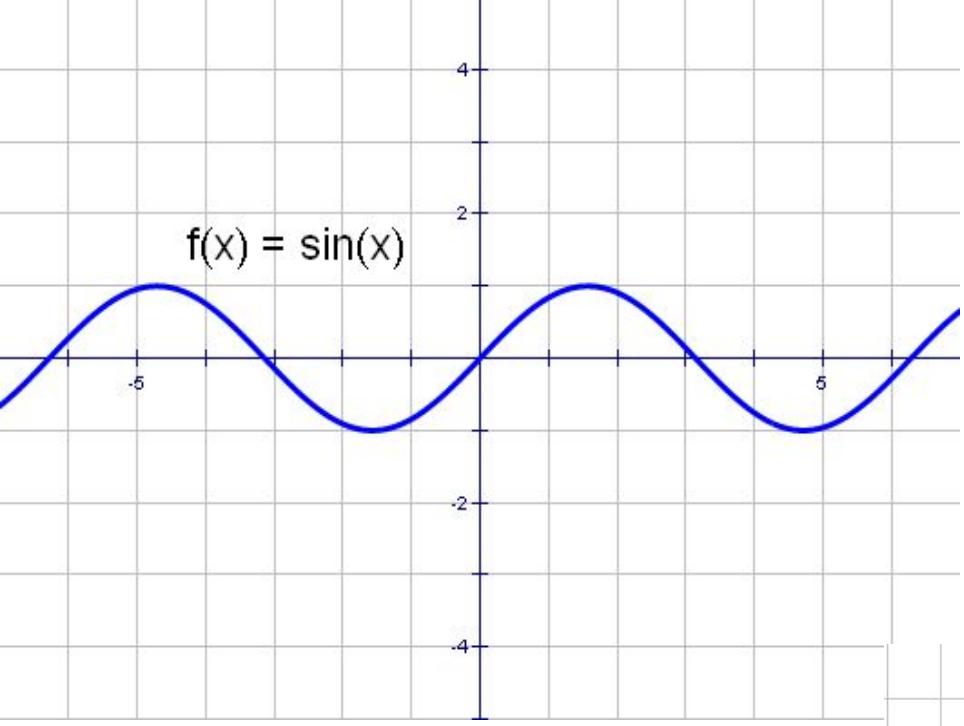

f(x) = sin(x)
4
2
-2
-4
-5
5

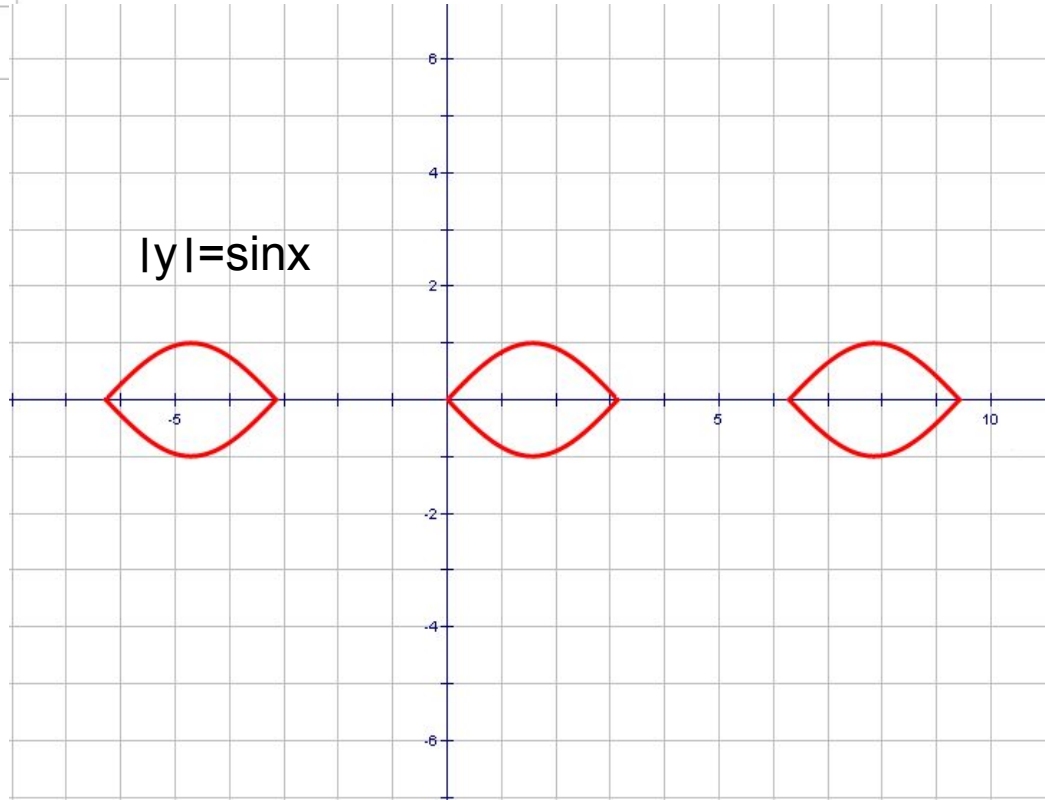

f(x) = sin(|x|)
4
2
-2
-4
-5
5

$y = \sin x$ и $|y| = \sin x$


f(x) = sin(x)
4
2
-2
-4
-5
5

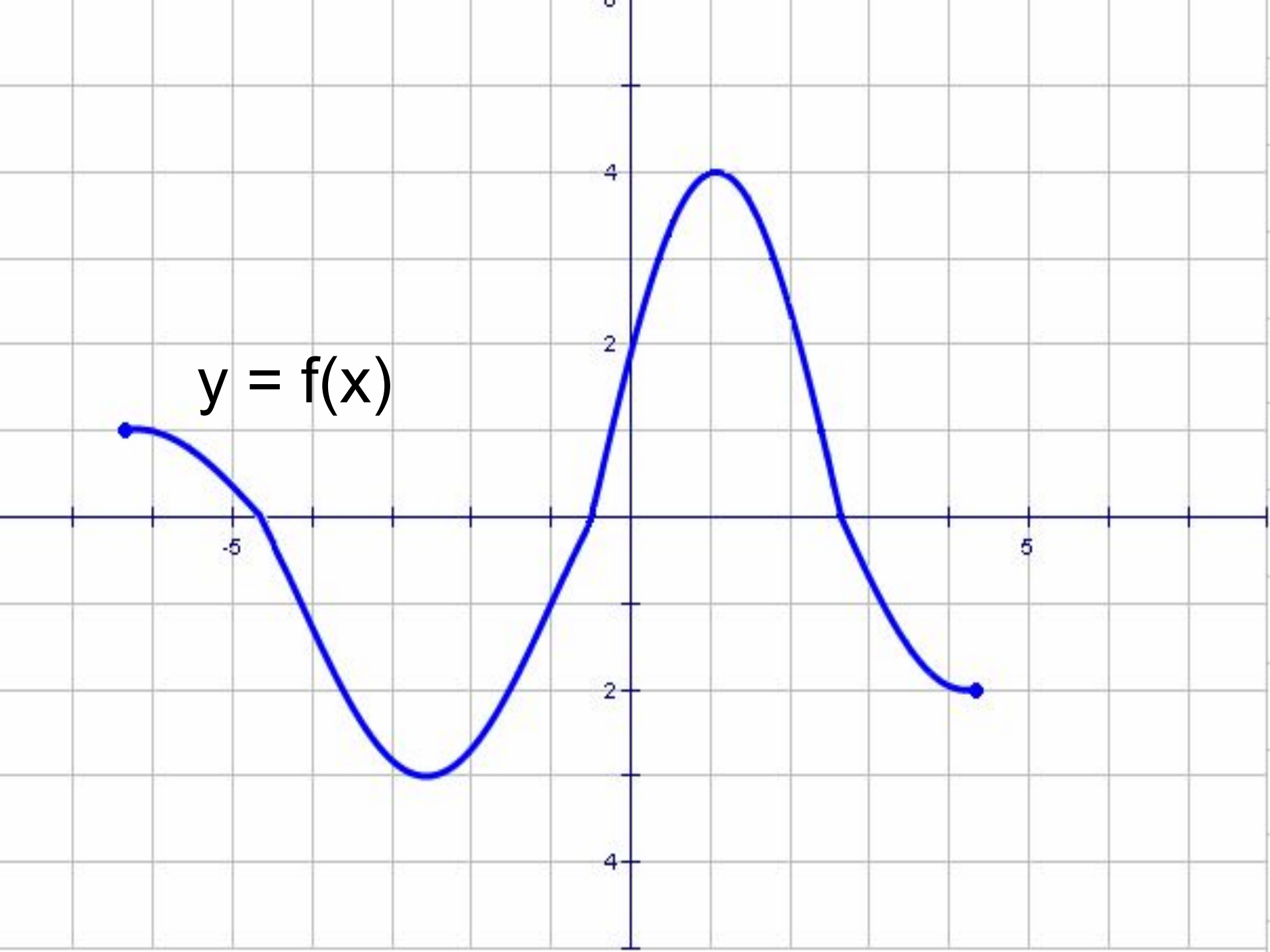

|y|=sinx
6
4
2
-2
-4
-6
-5
5
10

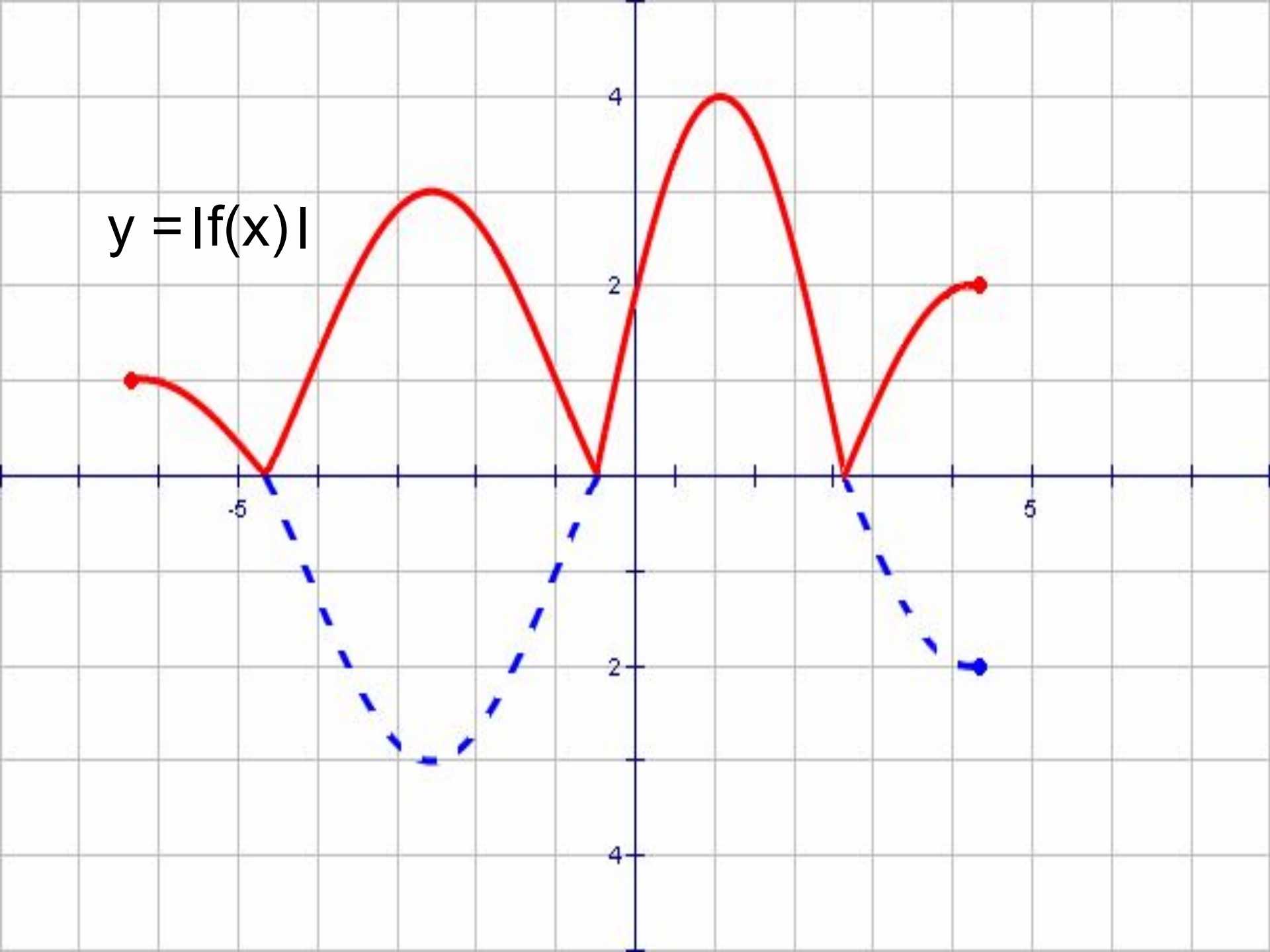

f(x) = sin(x)
4
2
-2
-4
-5
5

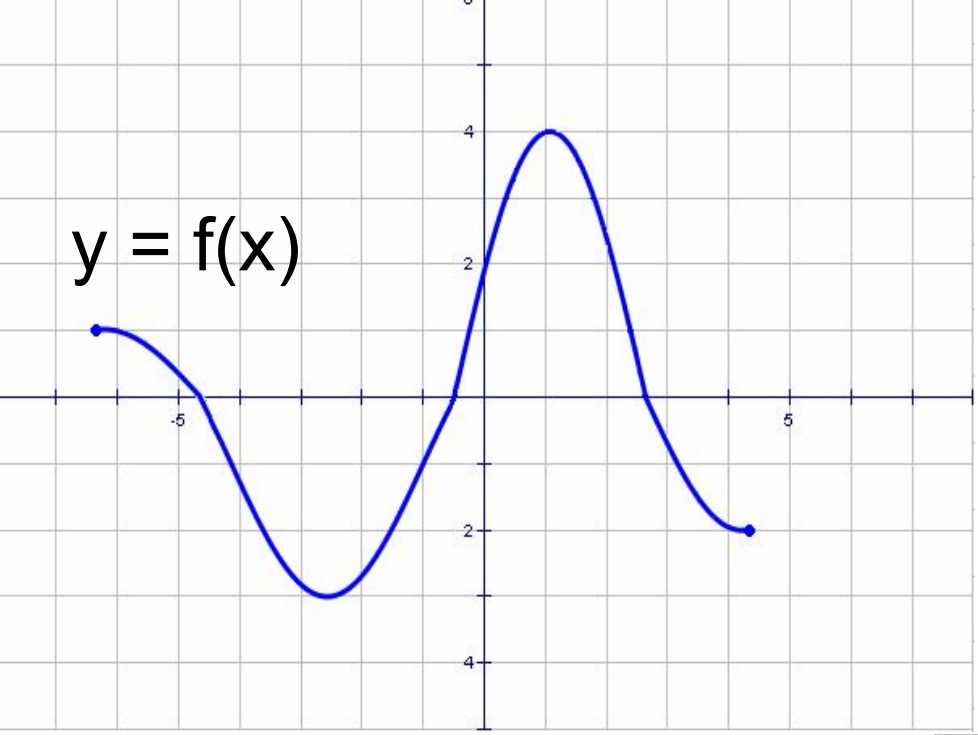

|y|=sinx
6
4
2
-2
-4
-6
-5
5
10

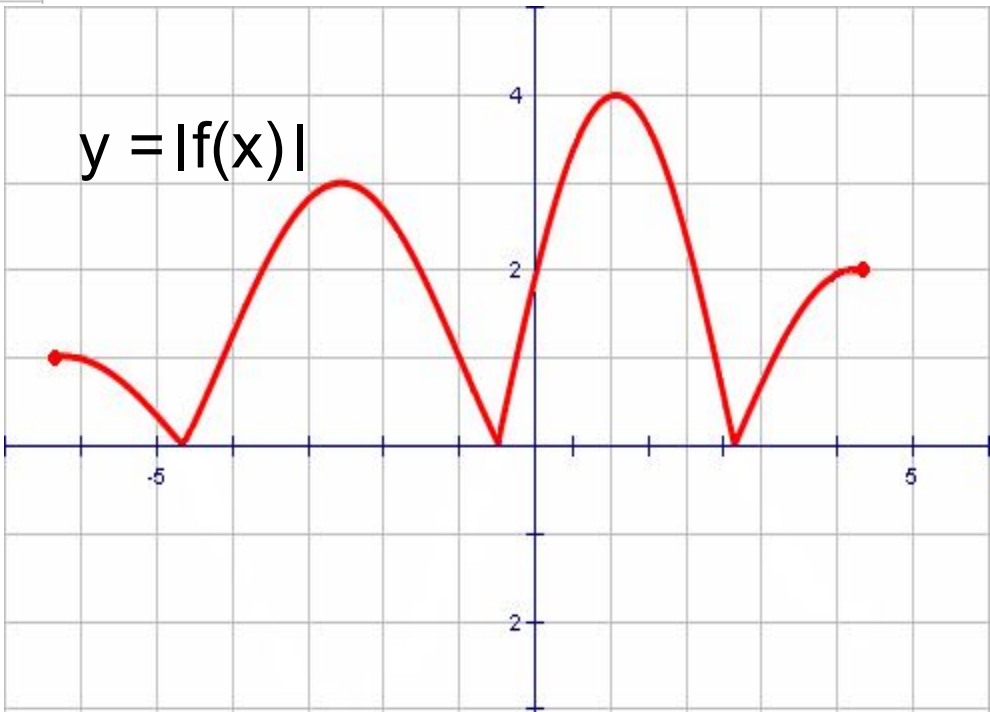
Подведение итогов (обобщение).

$y = f(x)$ и $y = |f(x)|$

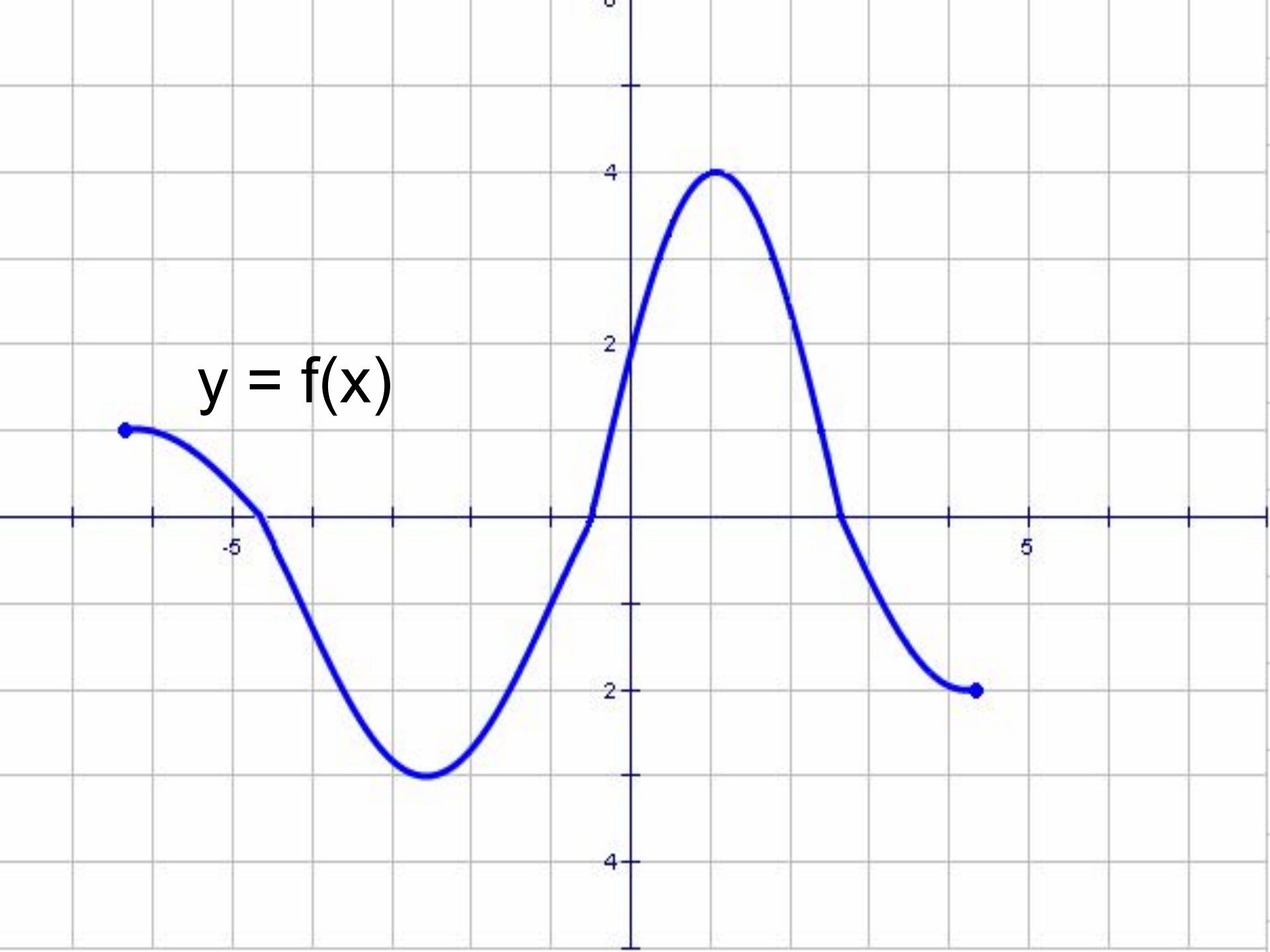

y = f(x)
-5
5
4
2
2
4

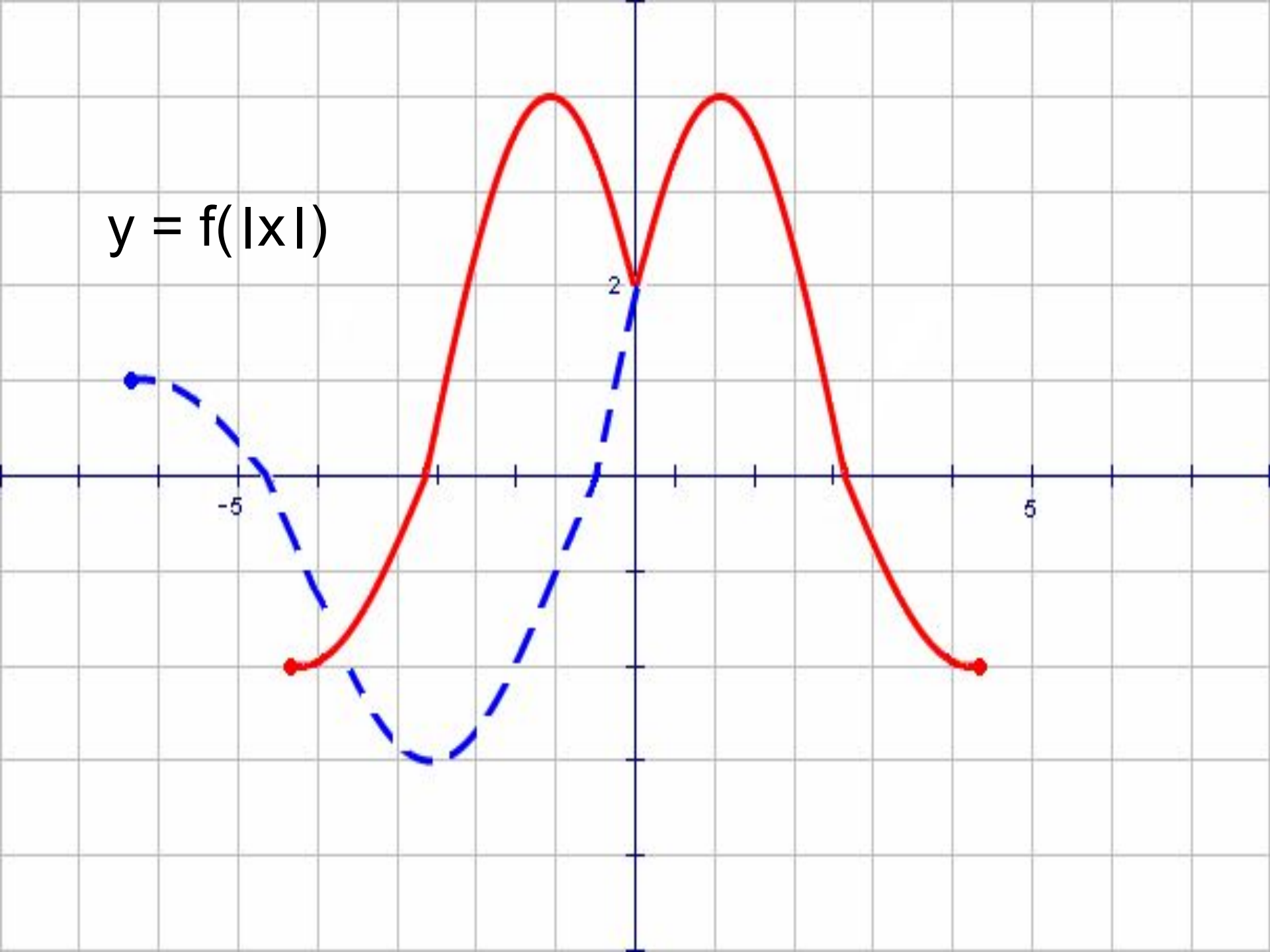

y = |f(x)|
4
2
-5
5
2
4

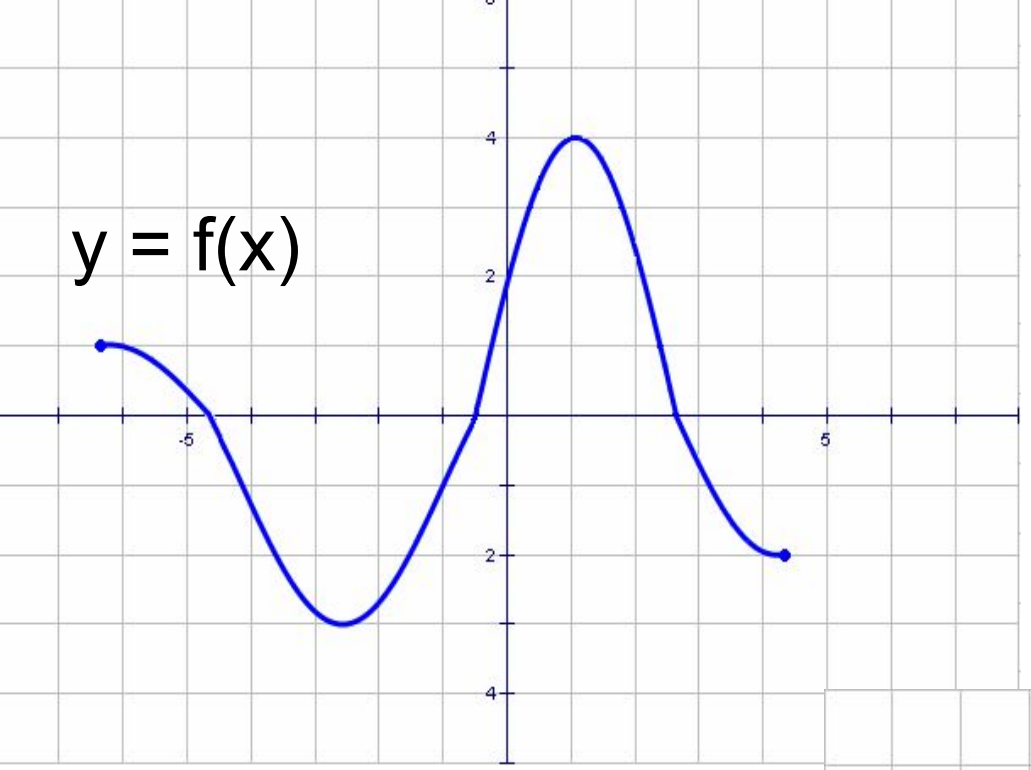

y = f(x)
4
2
-5
5
2
4

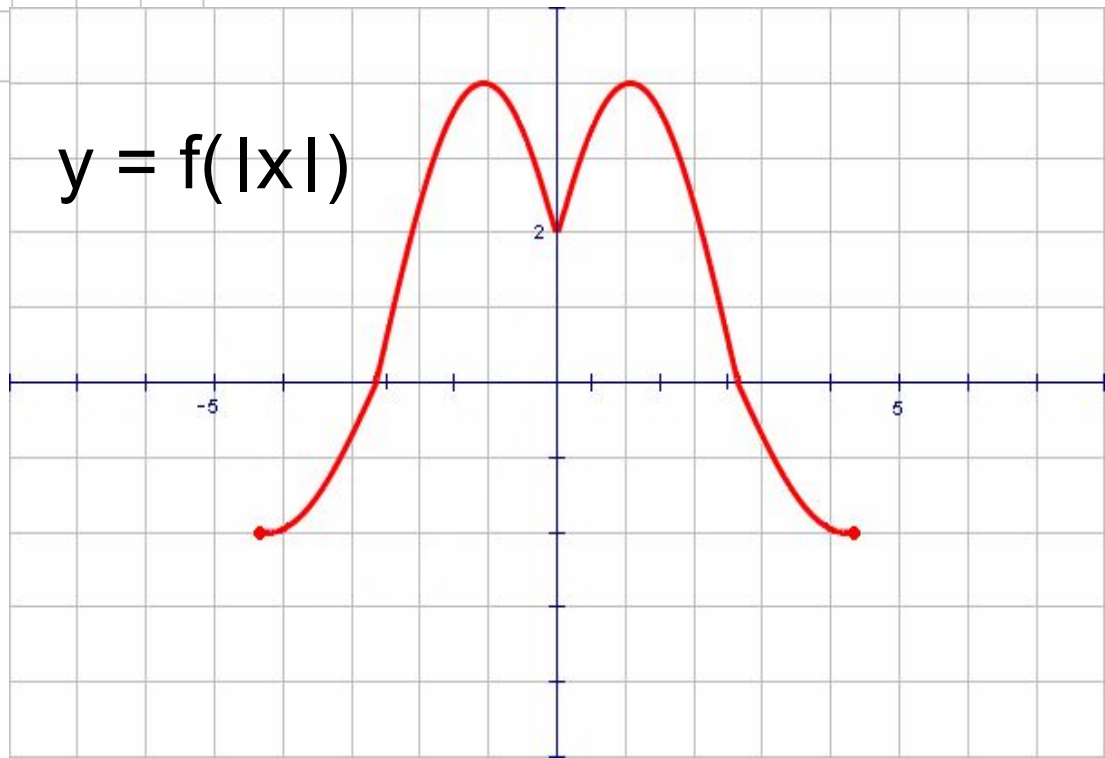

y = |f(x)|
4
2
-5
5
2

$y = f(x)$ и $y = f(|x|)$

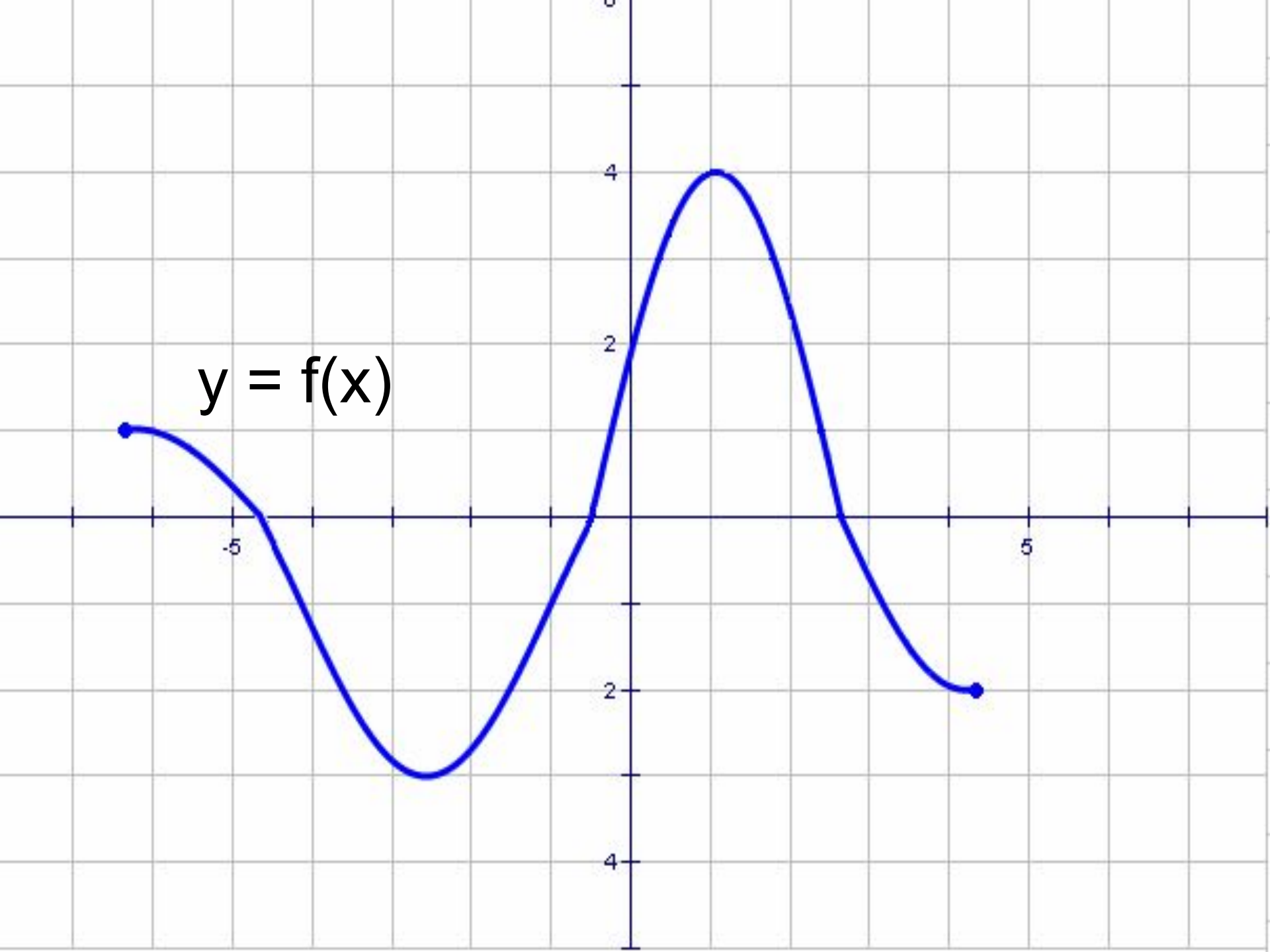

y = f(x)
-5
5
4
2
2
4

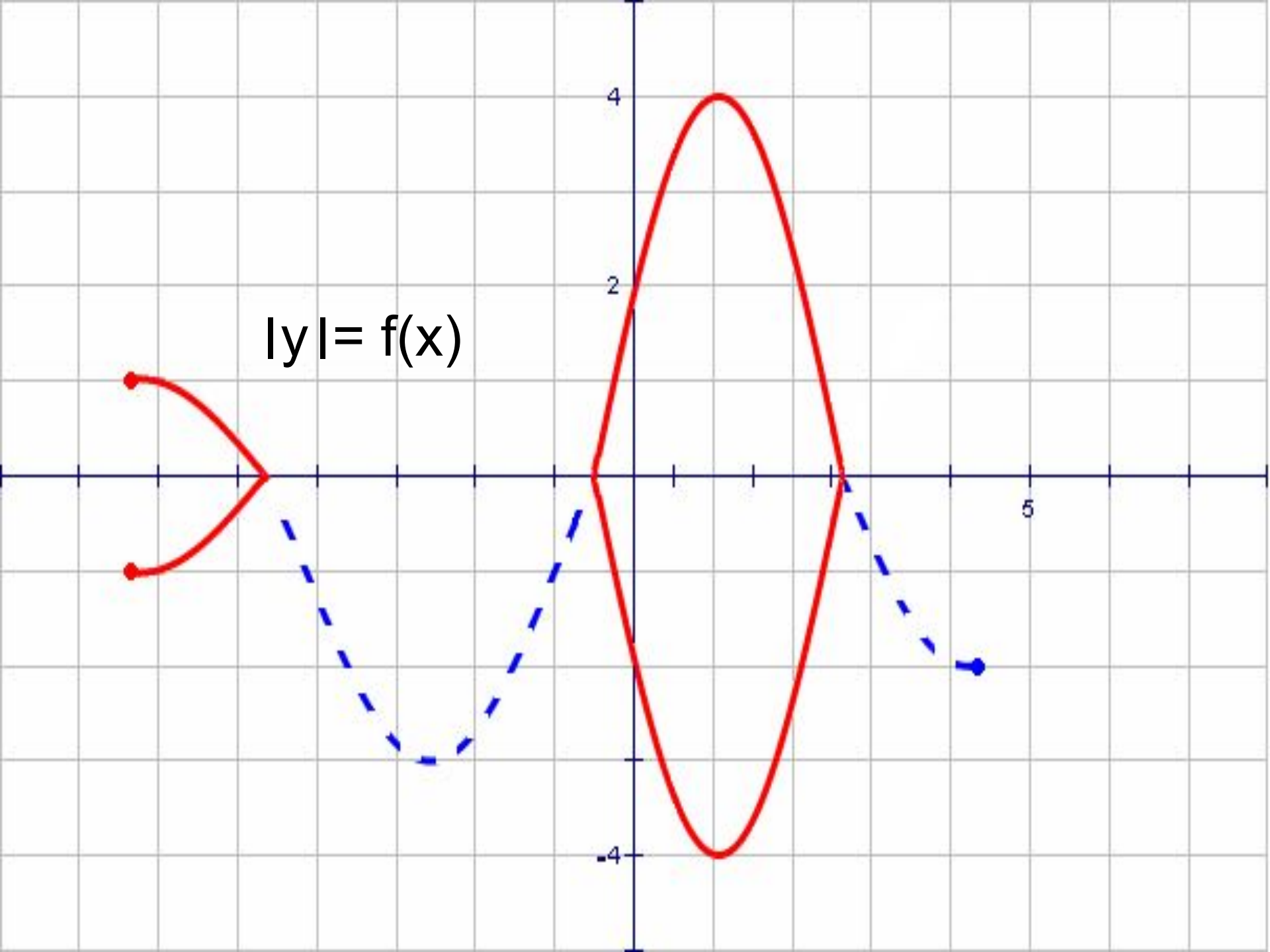

y = f(|x|)
2
-5
5

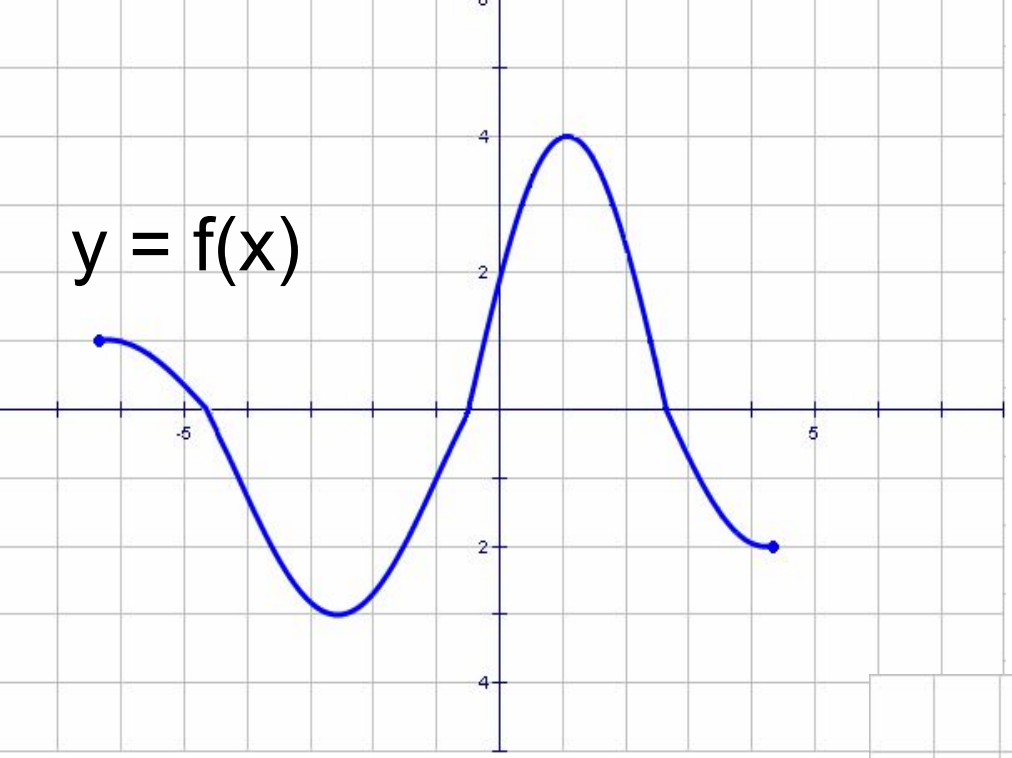

y = f(x)
4
2
-5
5
2
4

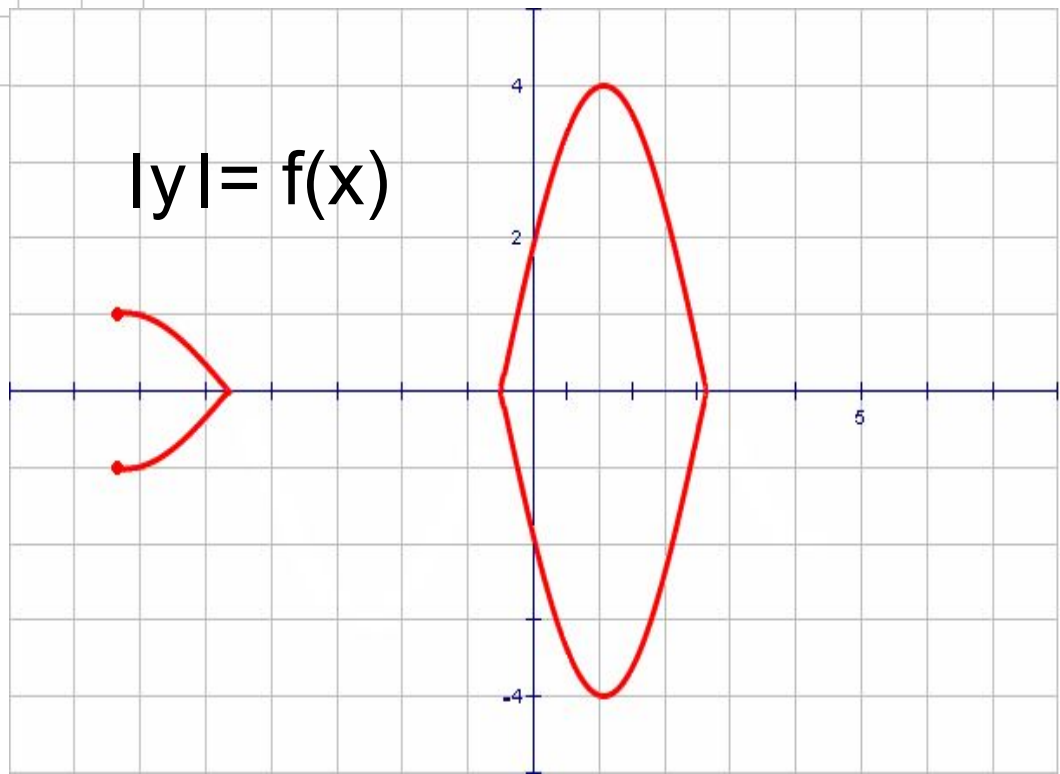

y = f(|x|)
2
-5
5

$y = f(x)$ и $|y| = f(x)$

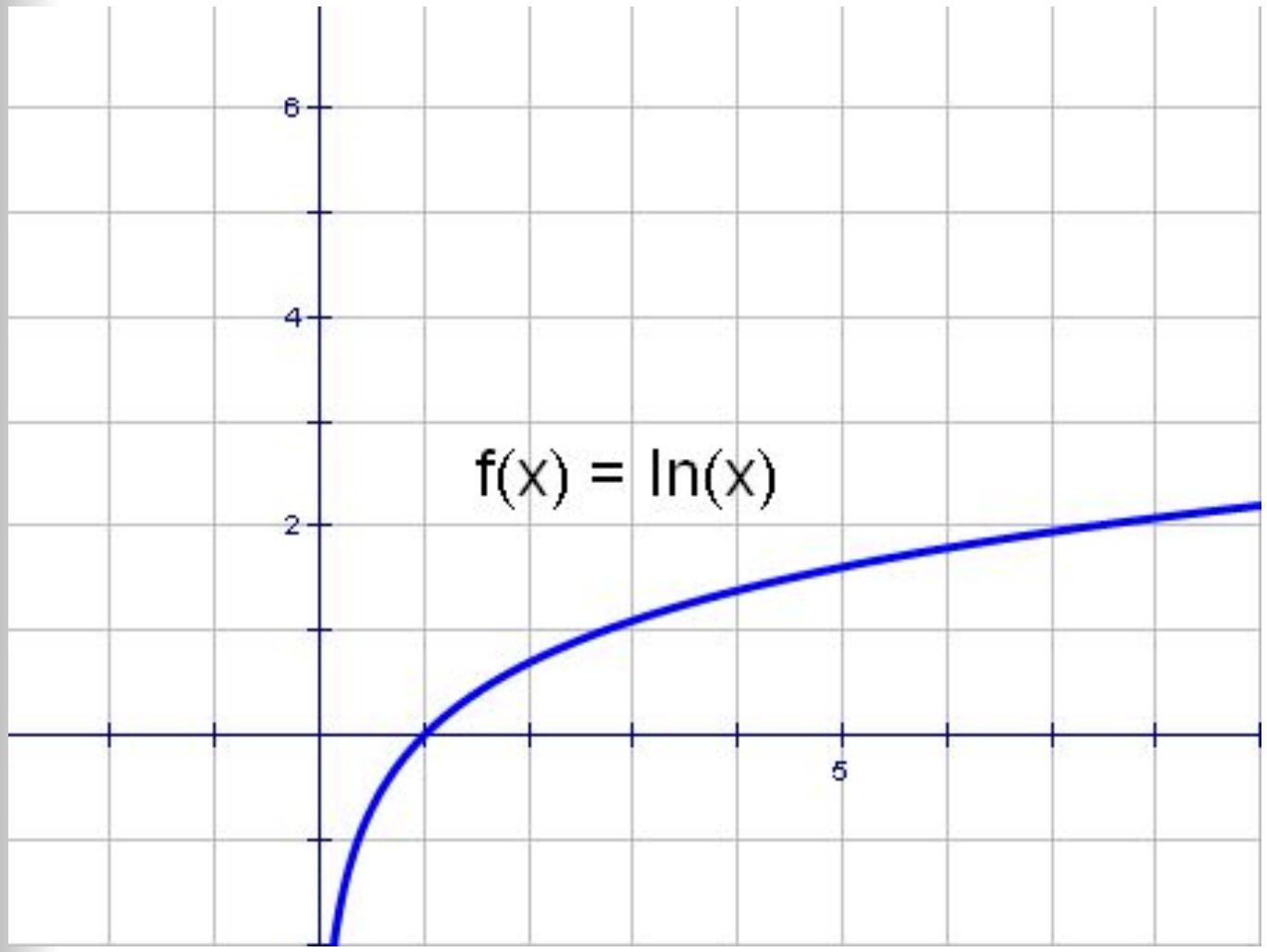

y = f(x)
-5
5
4
2
2
4


|y| = f(x)
4
2
5
-4


y = f(x)
4
2
-5
5
2
4


|y| = f(x)
4
2
5
-4

В 11-ом классе мы будем изучать логарифмическую функцию.
График функции y=ln x



Попробуйте самостоятельно построить графики:

1.y= |lnx|

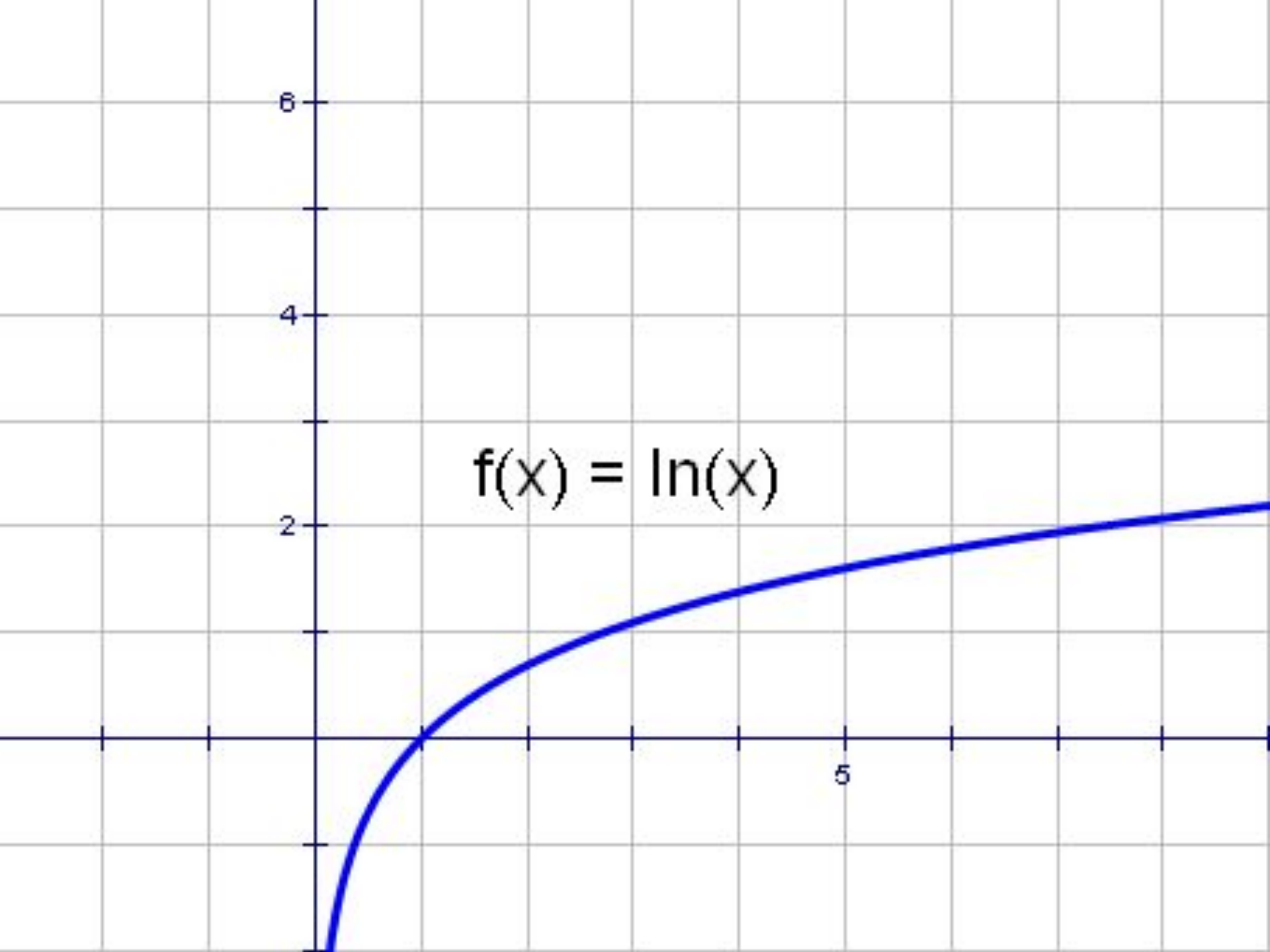
2. y= ln |x|

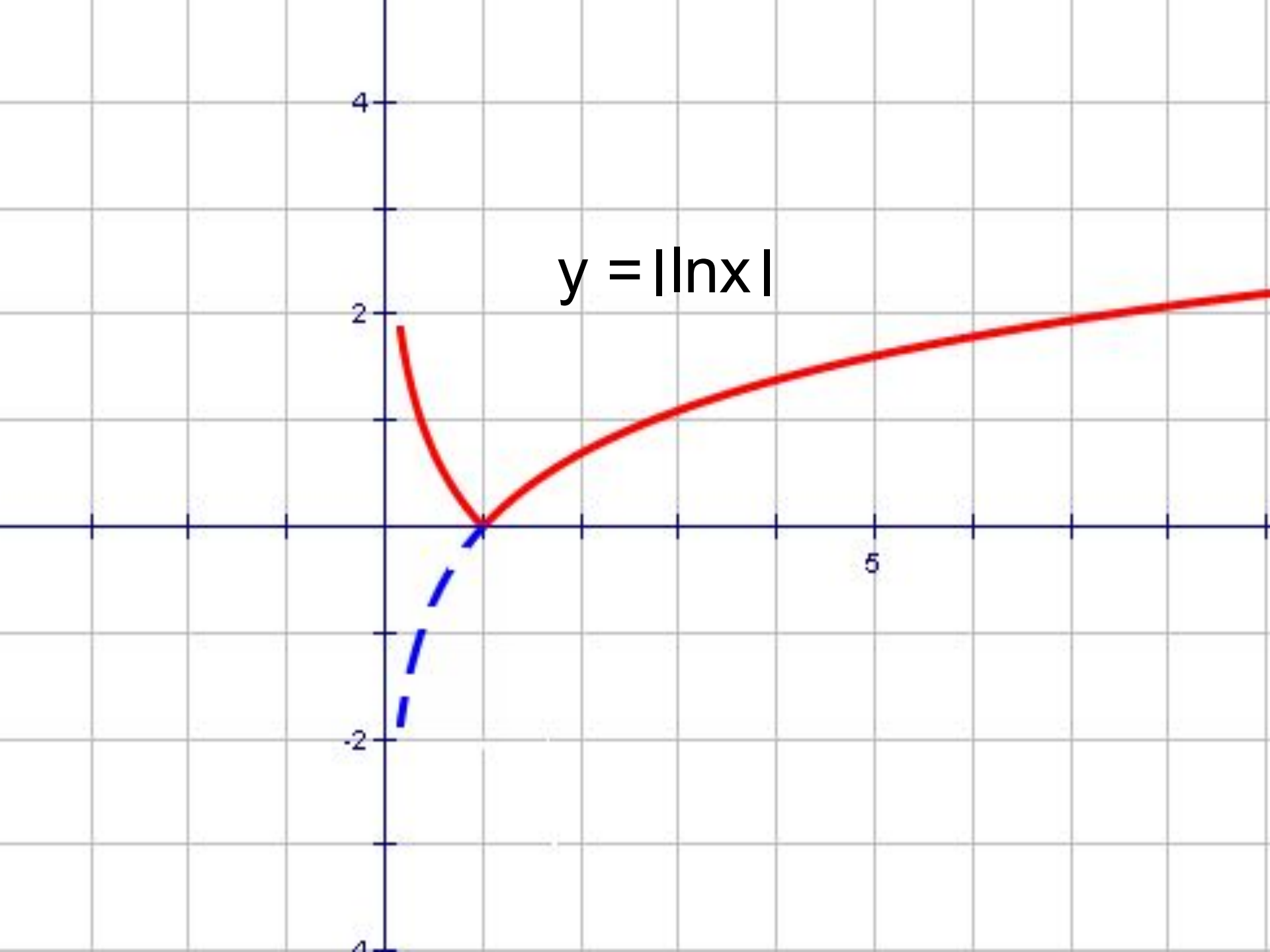
3. |y|= lnx

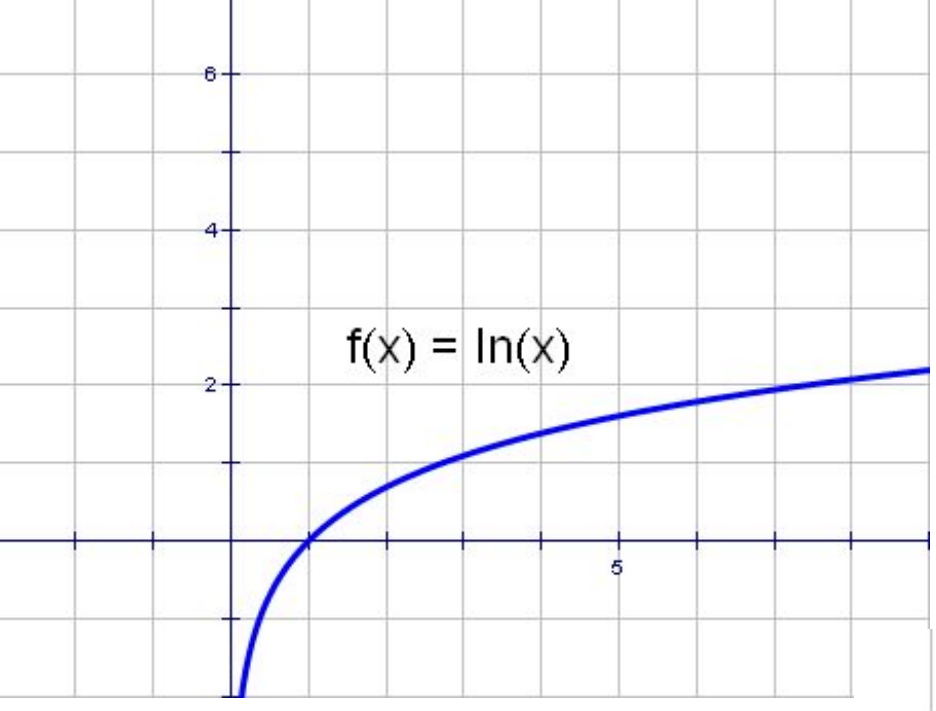
lnx

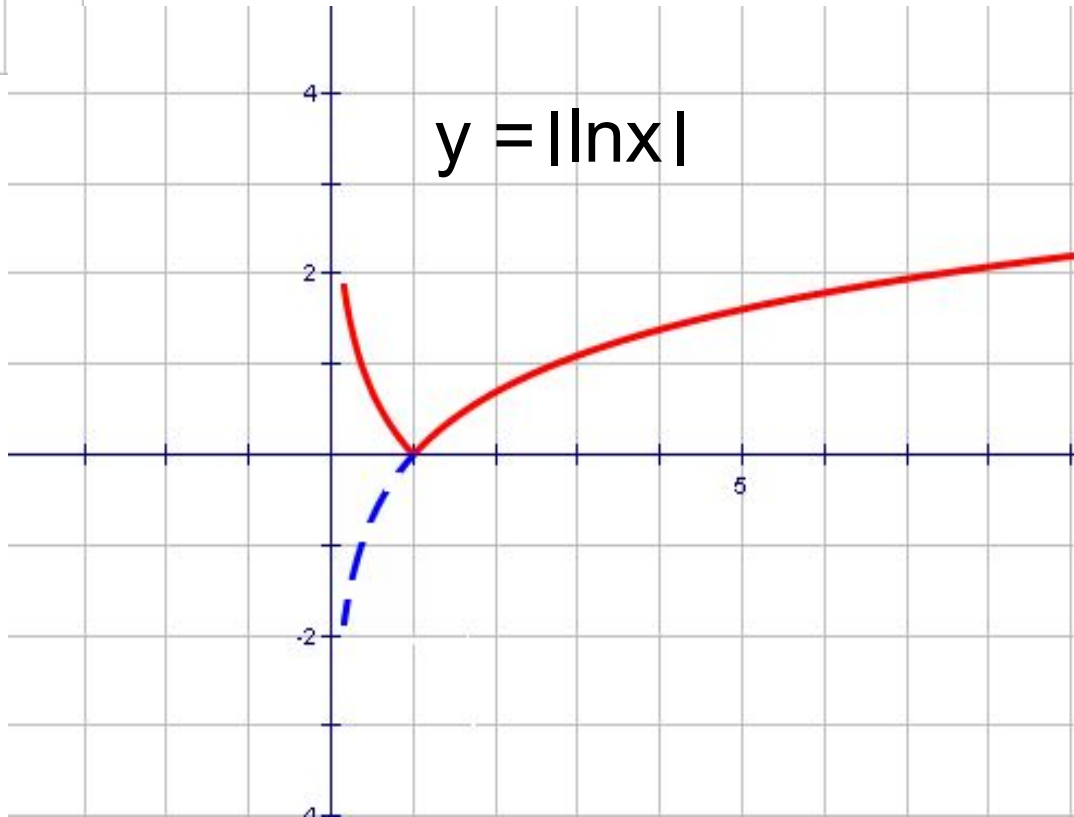
ответы

$y = \ln x$ и $y = |\ln x|$

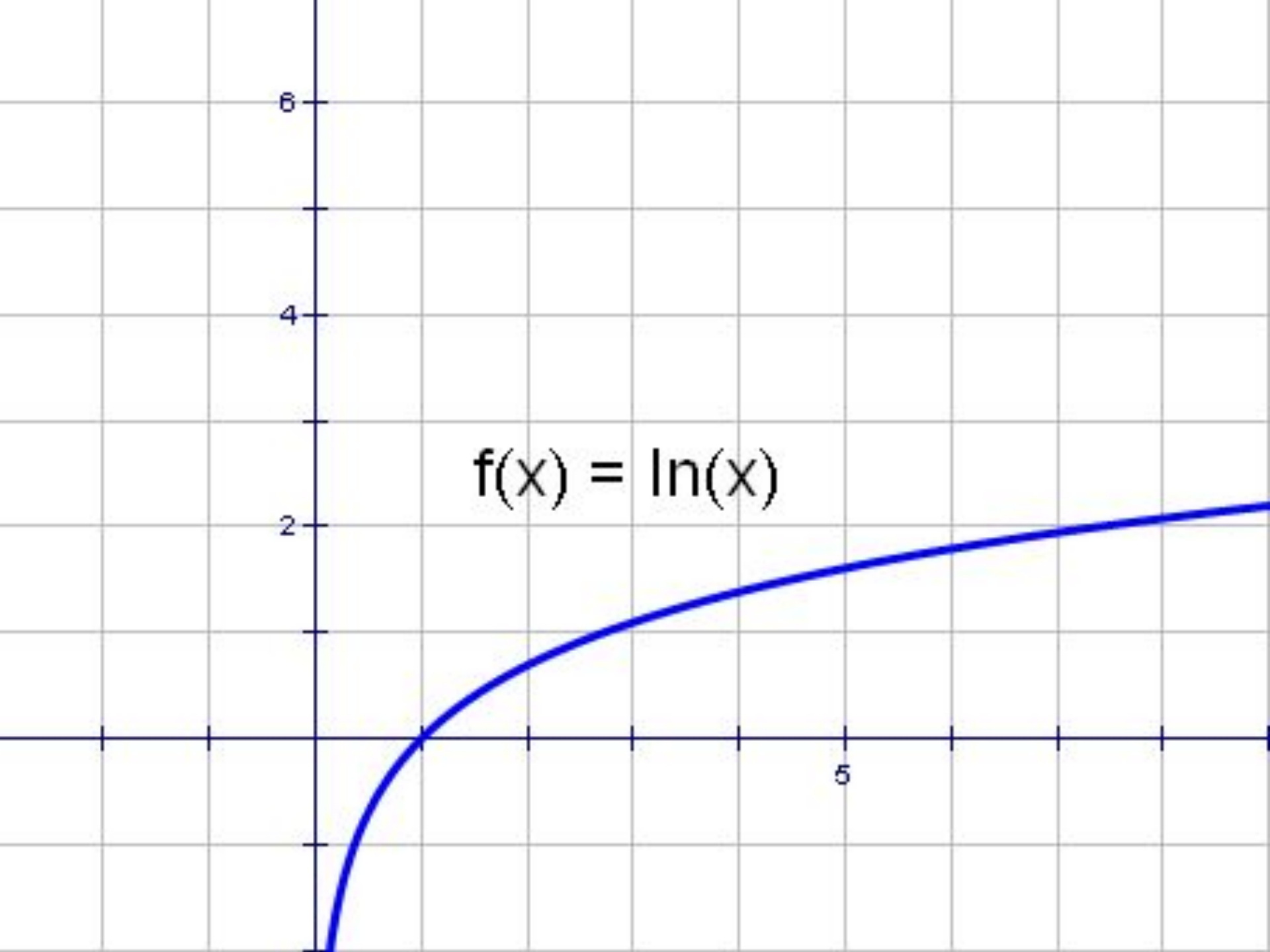

6
4
2
5
f(x) = ln(x)

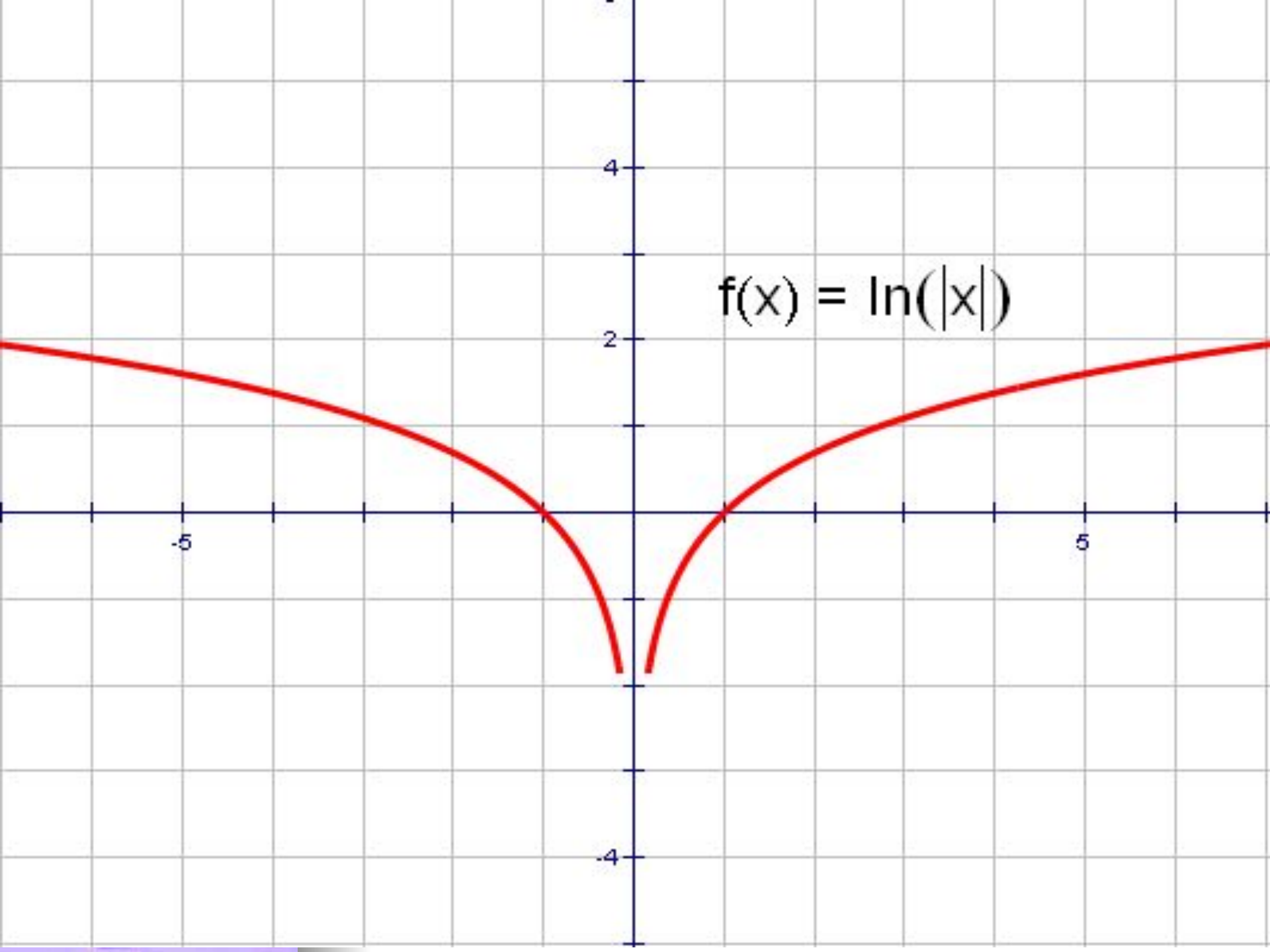

y = |lnx|
4
2
-2
5

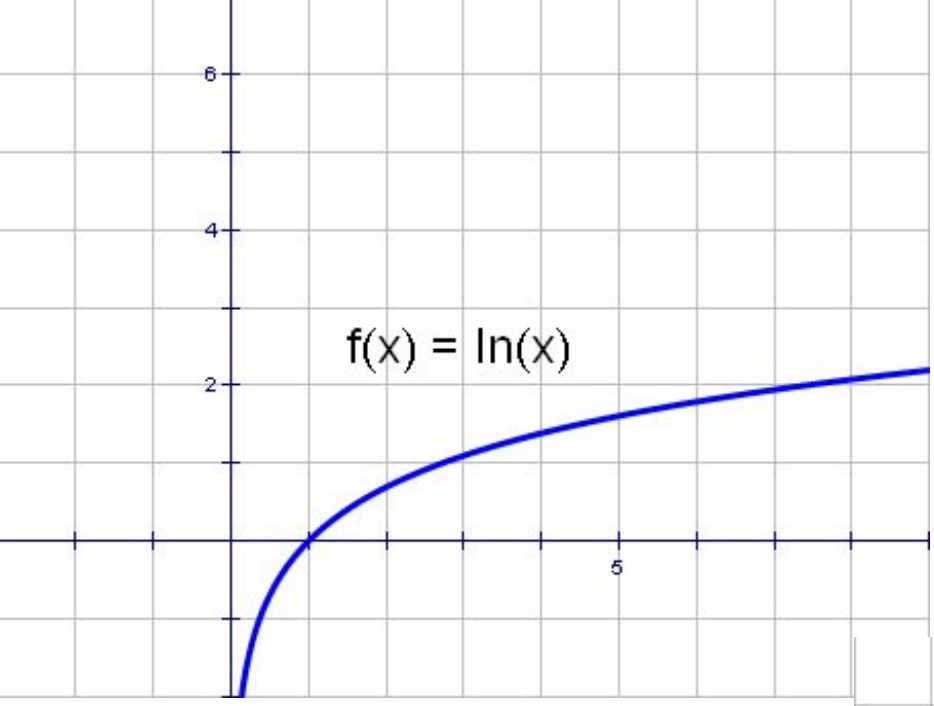

6
4
2
5
f(x) = ln(x)

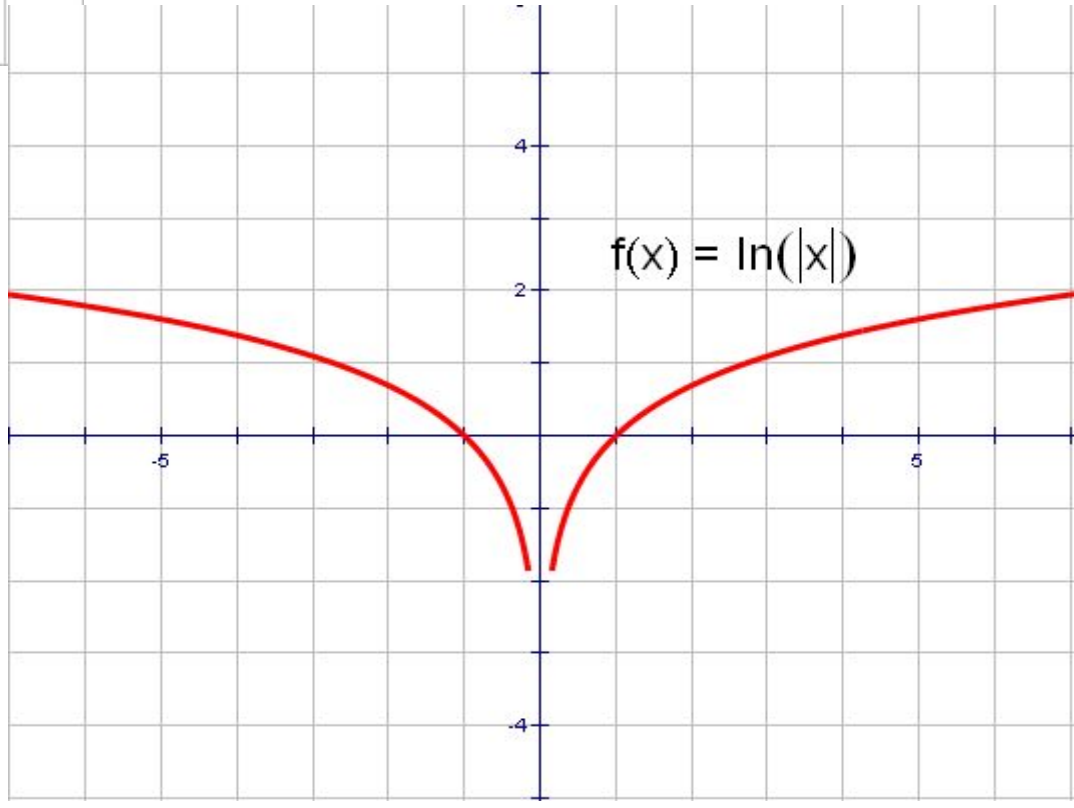

4
2
-2
5
y = |lnx|

$y = \ln x$ и $y = \ln|x|$

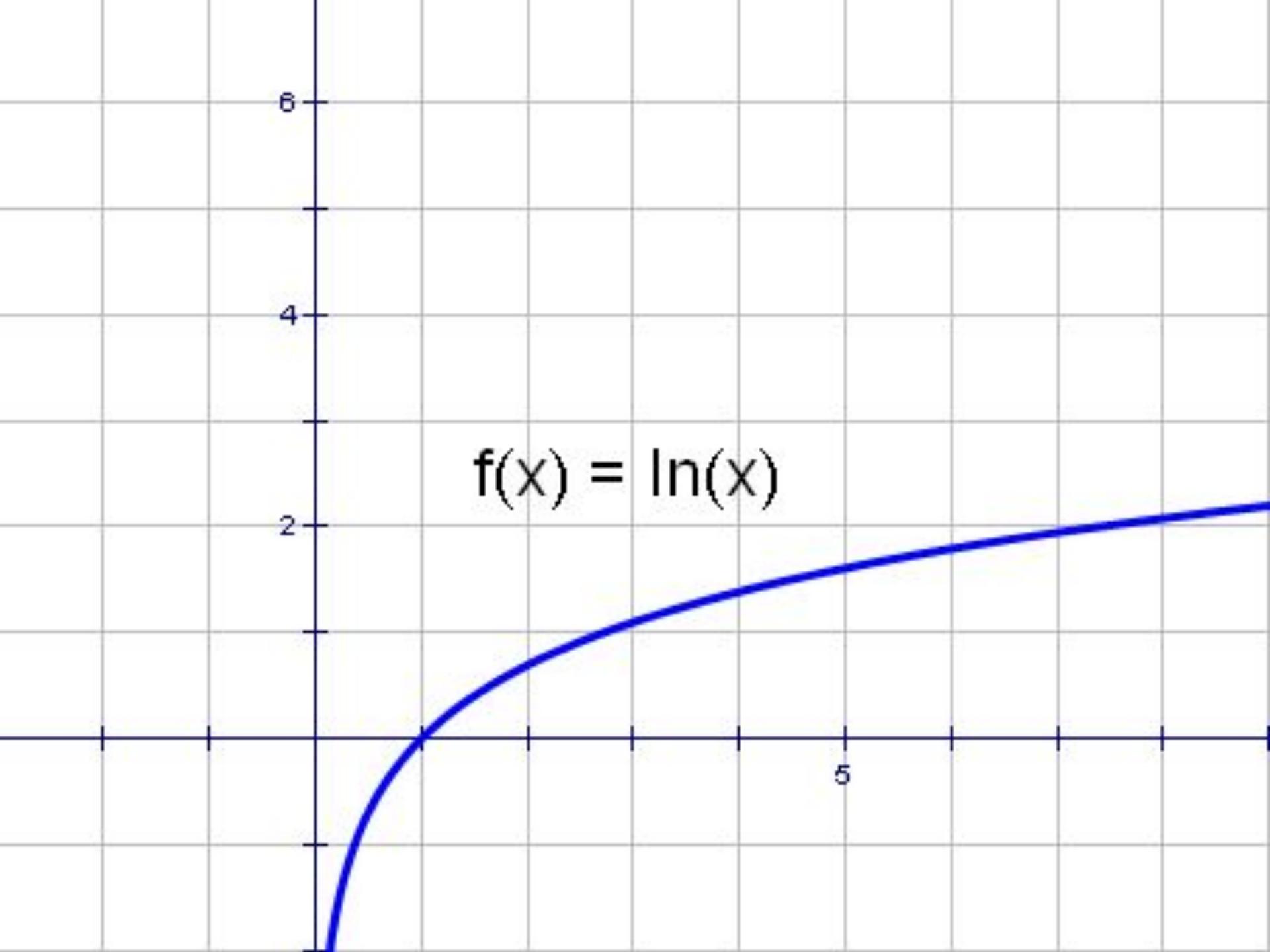

6
4
2
5
f(x) = ln(x)

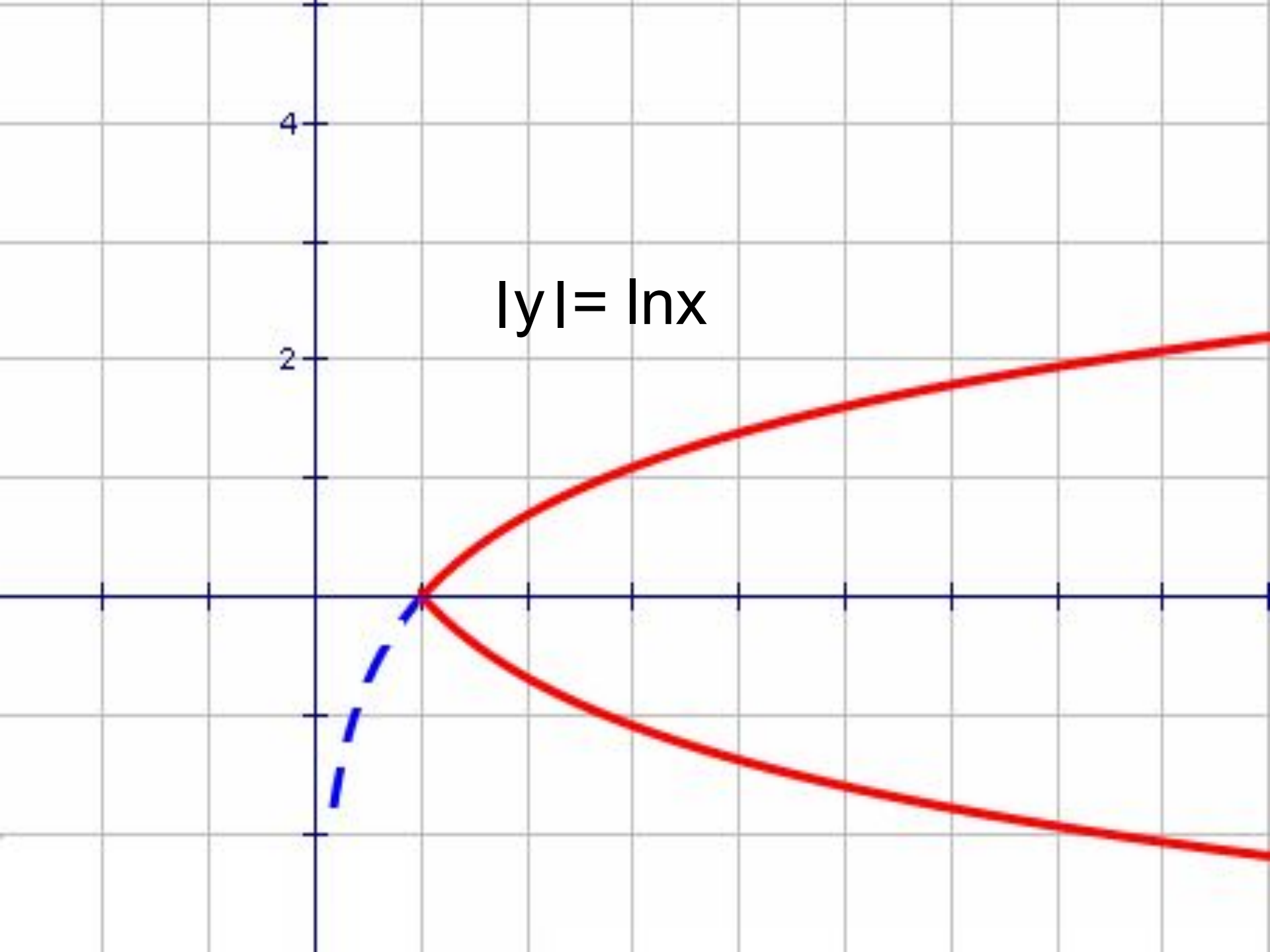

f(x) = ln(|x|)
4
2
-4
-5
5

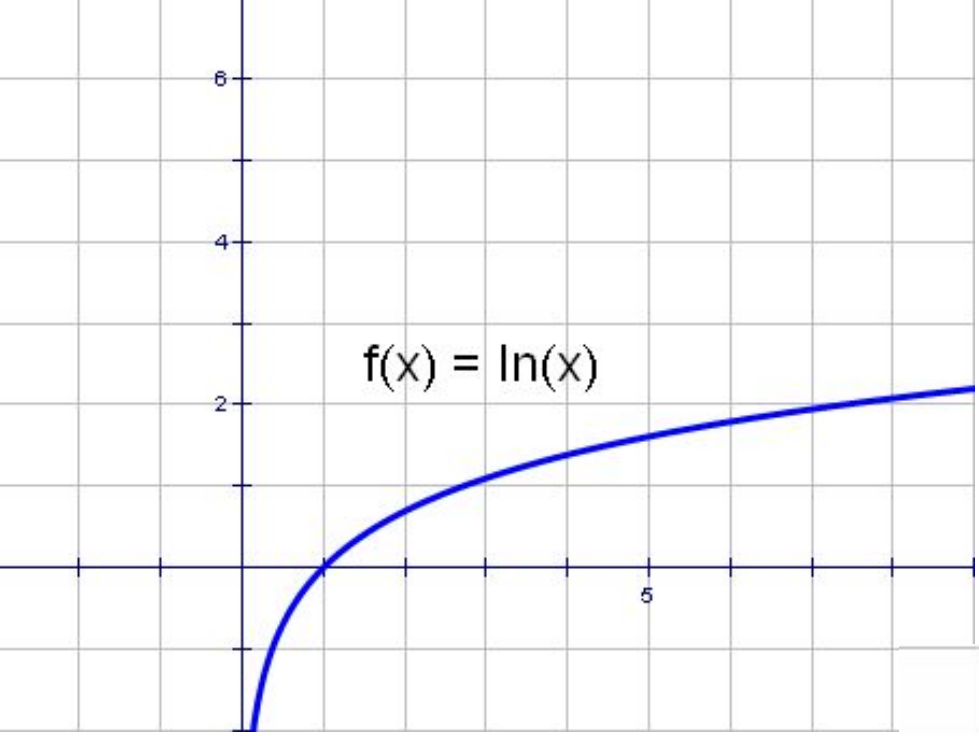

6
4
2
f(x) = ln(x)
5

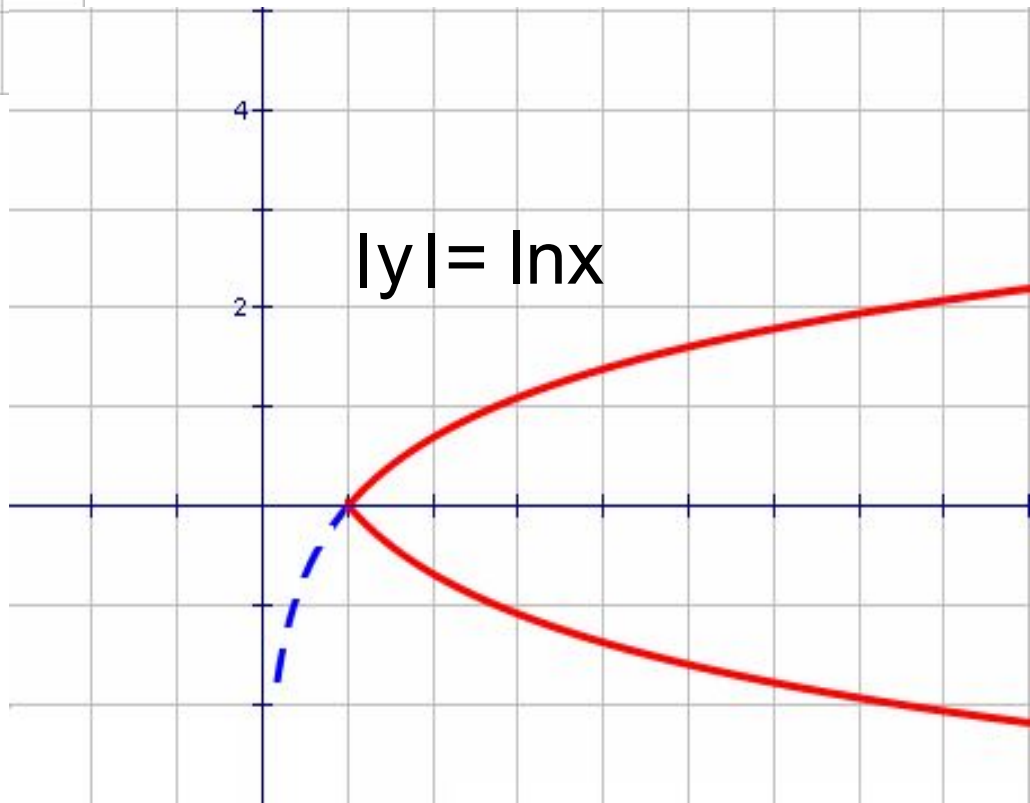

4
2
f(x) = ln(|x|)
-5
5
-4

$y = \ln x$ и $|y| = \ln x$


6
4
2
5
f(x) = ln(x)

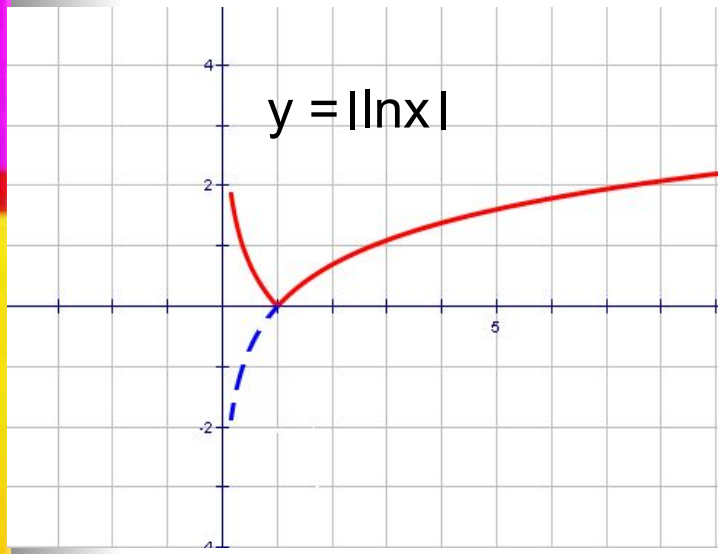

4
2
|y|= lnx

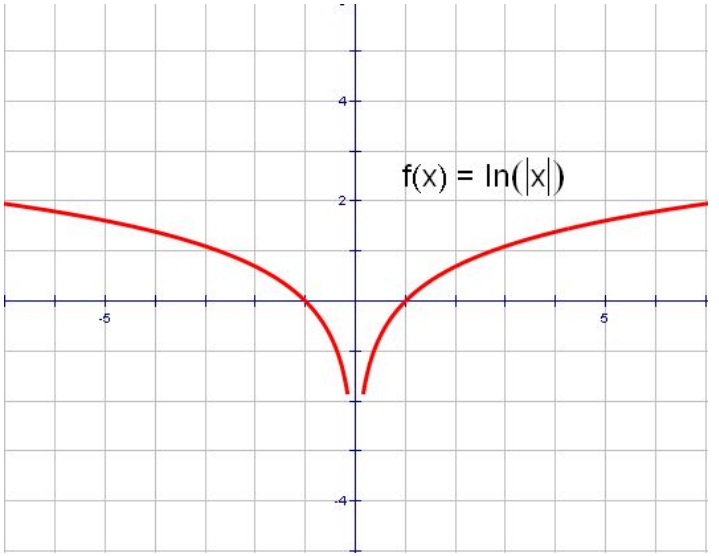

6
4
2
5
f(x) = ln(x)

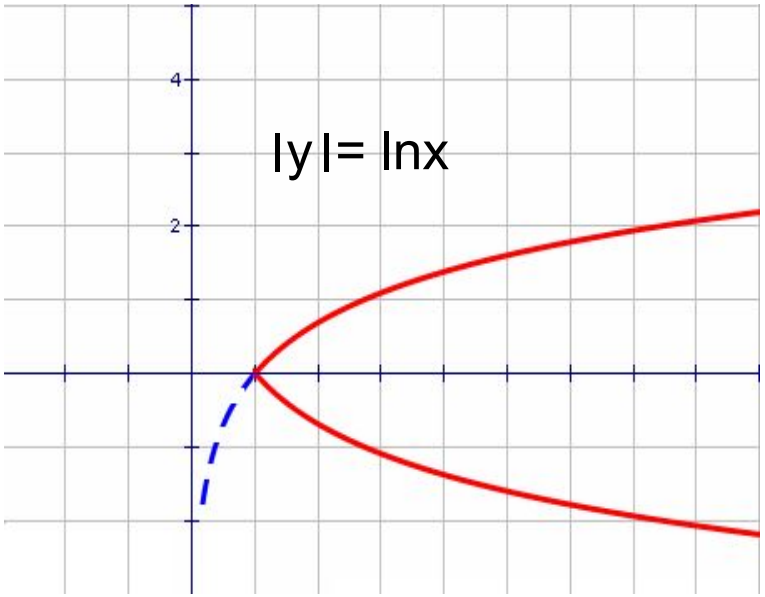

4
2
|y|= lnx




Ответы:







Домашнее задание:

Для функций

1. $y = x-2;$
2. $y = x^2-2x-3;$
3. $y = \sin x$

   Продумать построение графиков

$y = |f(|x|)|$

$|y| = |f(|x|)|$

Что сделали:

- Закрепили знания на ранее изученных функциях;
- Перенесли эти знания на новую функцию.

Вопрос классу.

Мы достигли поставленной цели?

?