



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

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

Квадратичная функция

Задание классу

Тригонометрическая функция

Домашнее задание

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

Рефлексия

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

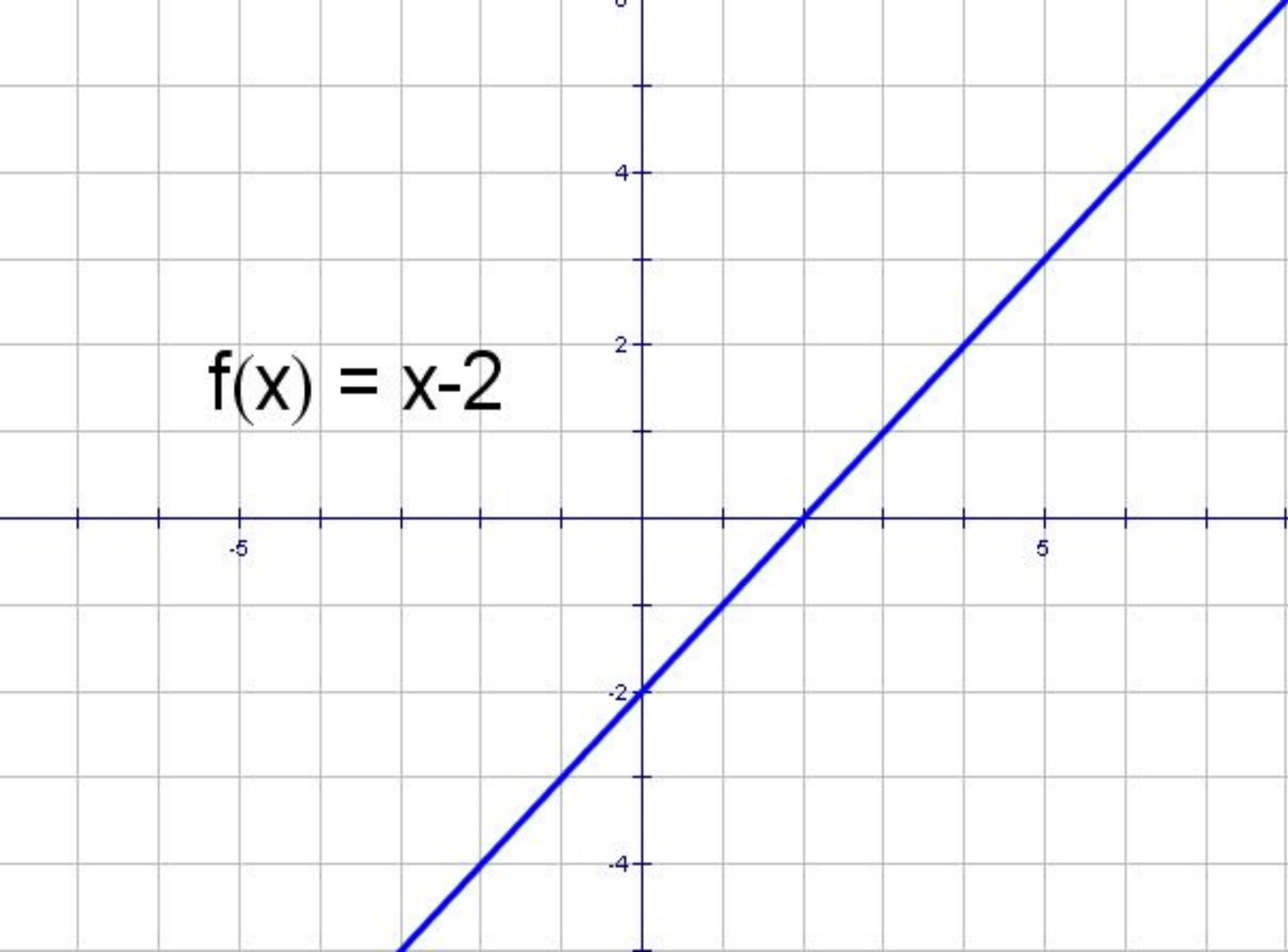
вопрос классу

$$y = x - 2$$

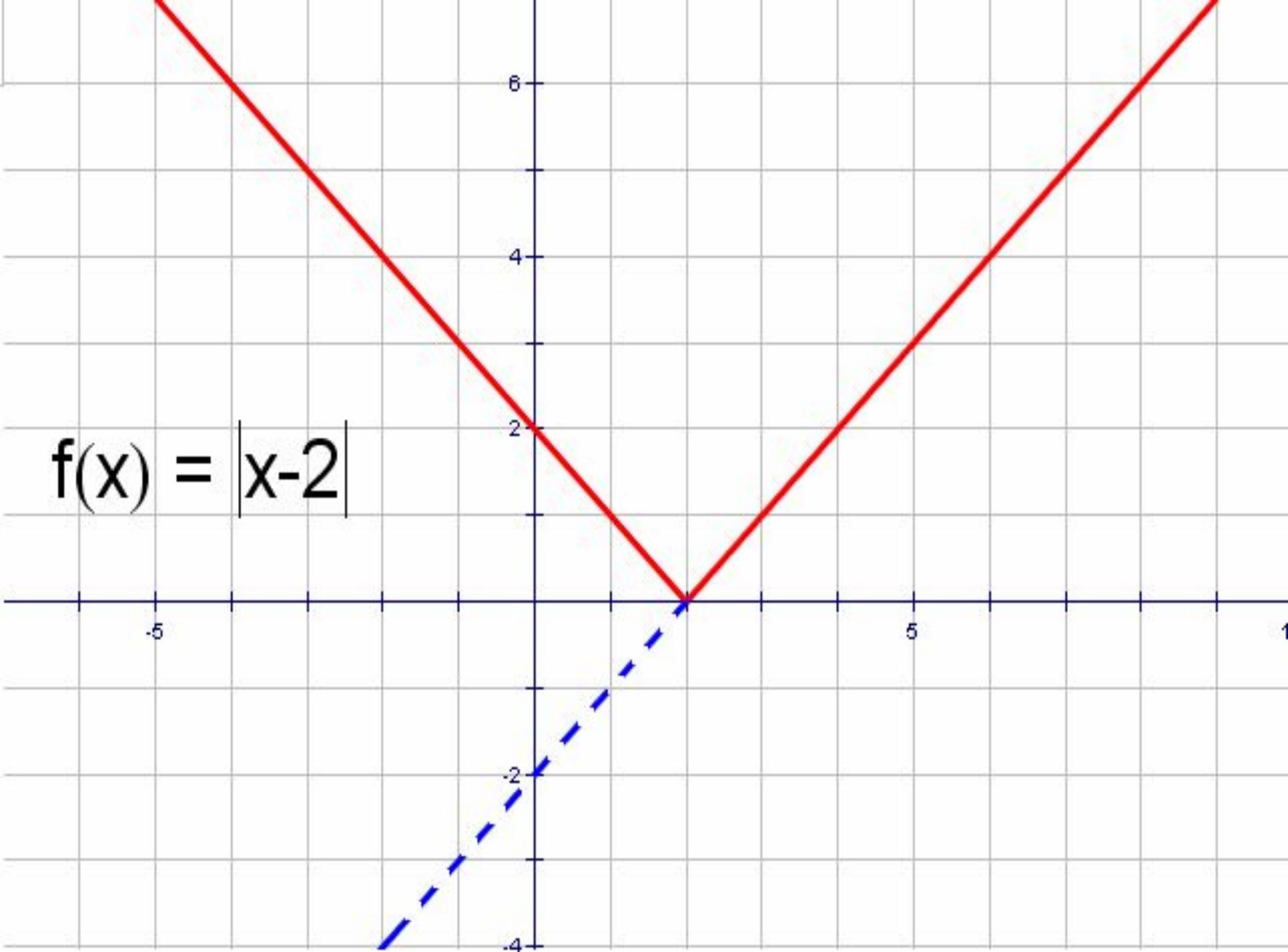
и

$$y = |x - 2|$$

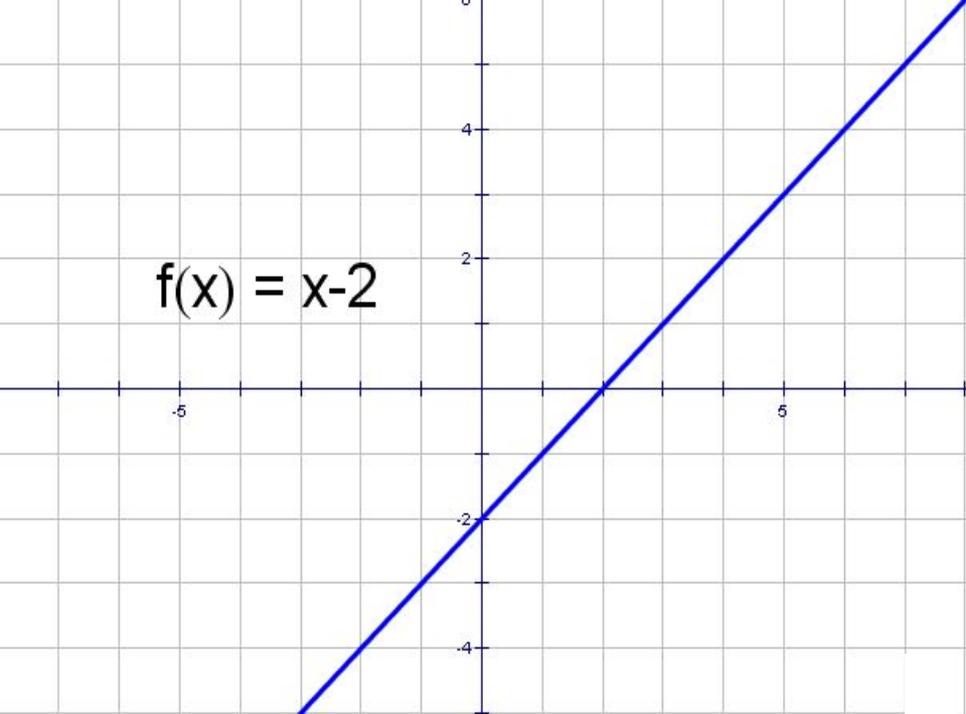
$$f(x) = x - 2$$



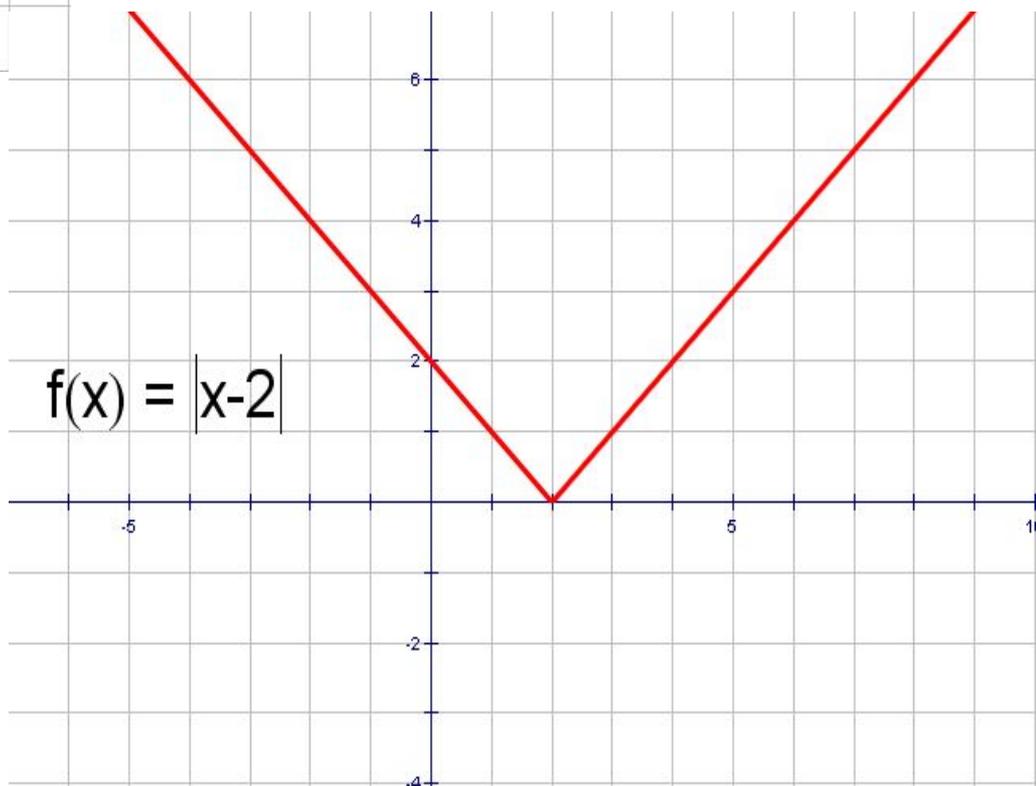
$$f(x) = |x-2|$$



$$f(x) = x - 2$$



$$f(x) = |x - 2|$$

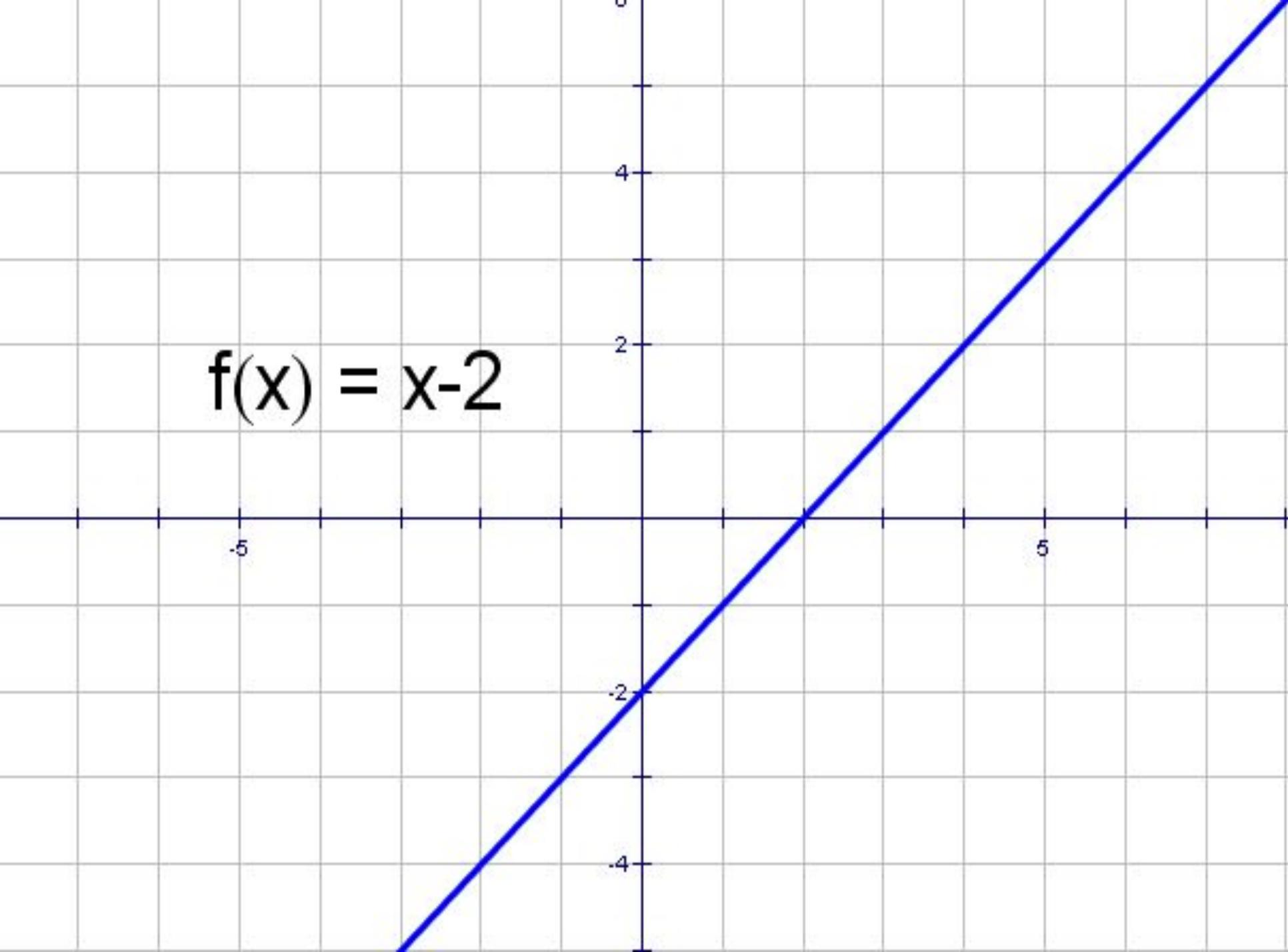


$$y = x - 2$$

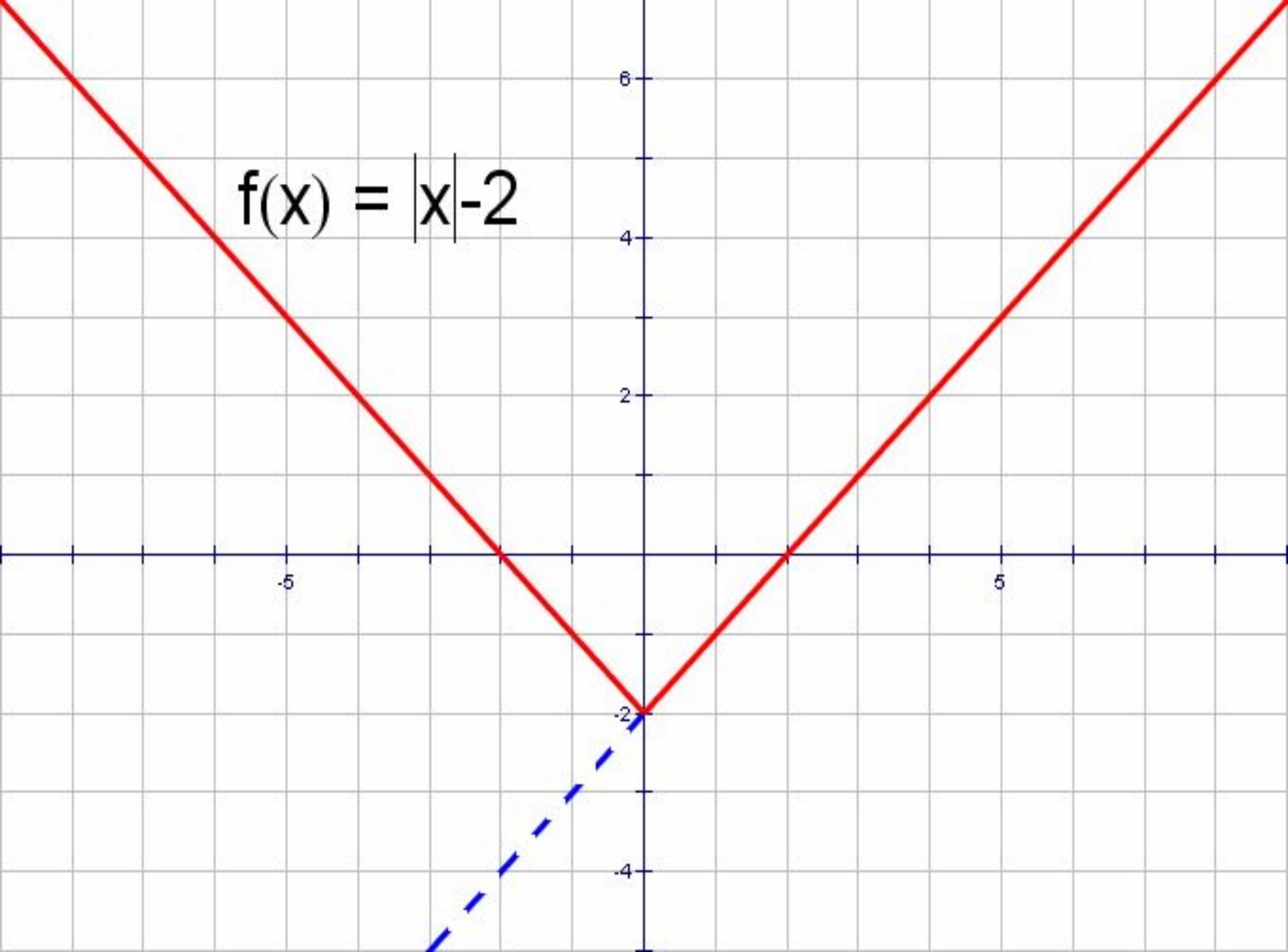
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$$y = |x| - 2$$

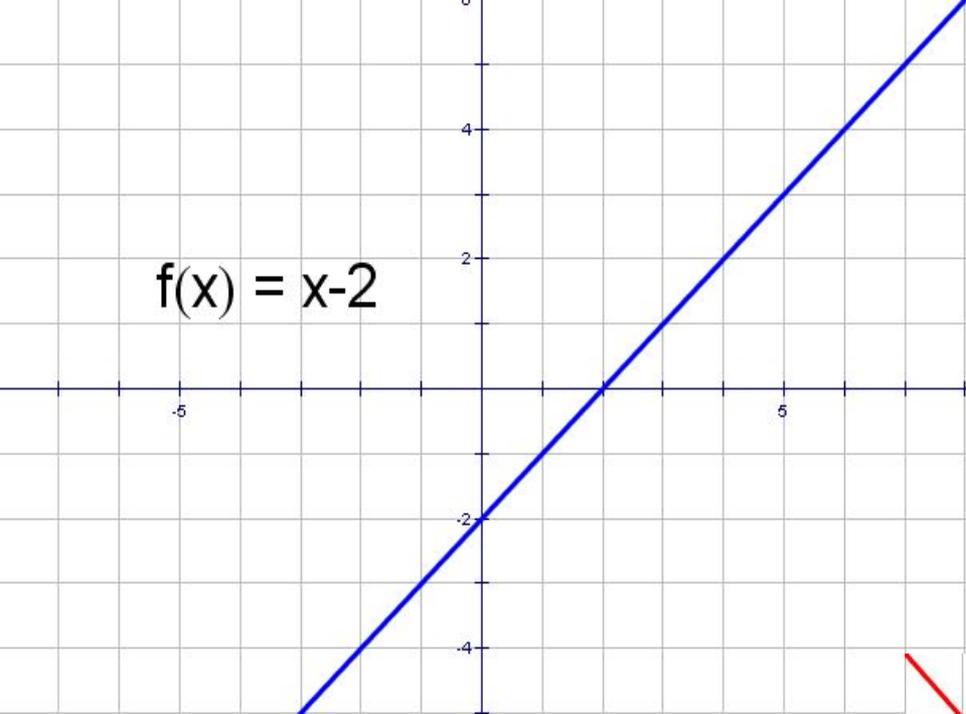
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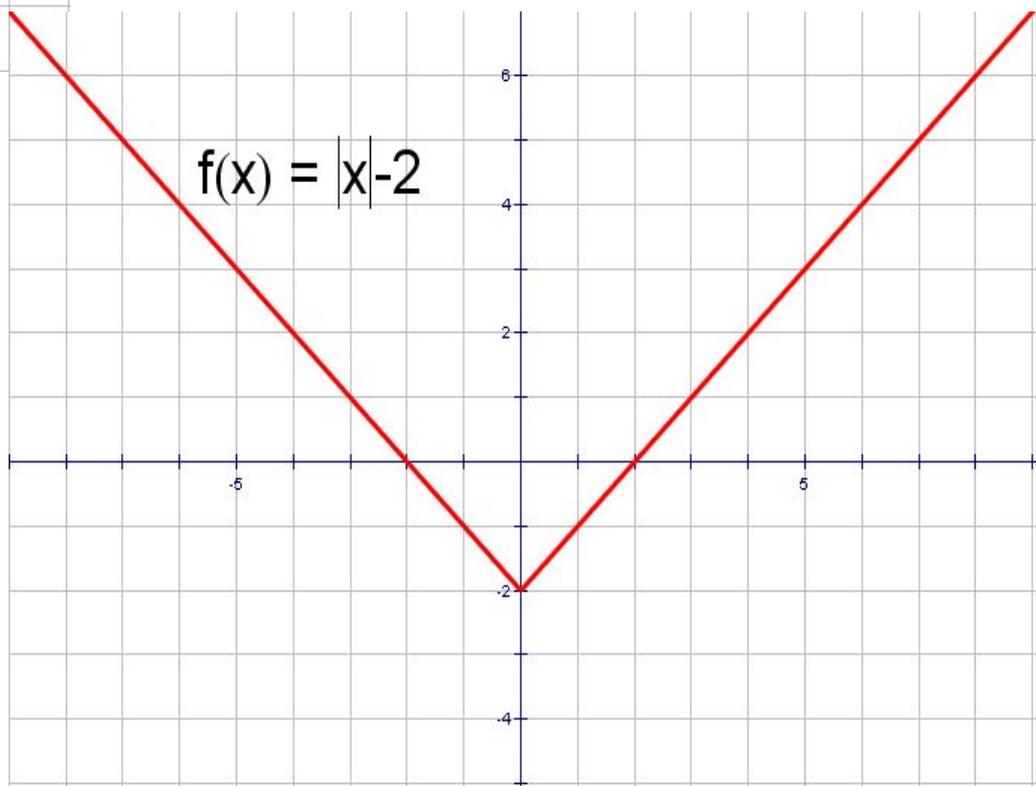
$$f(x) = |x-2|$$



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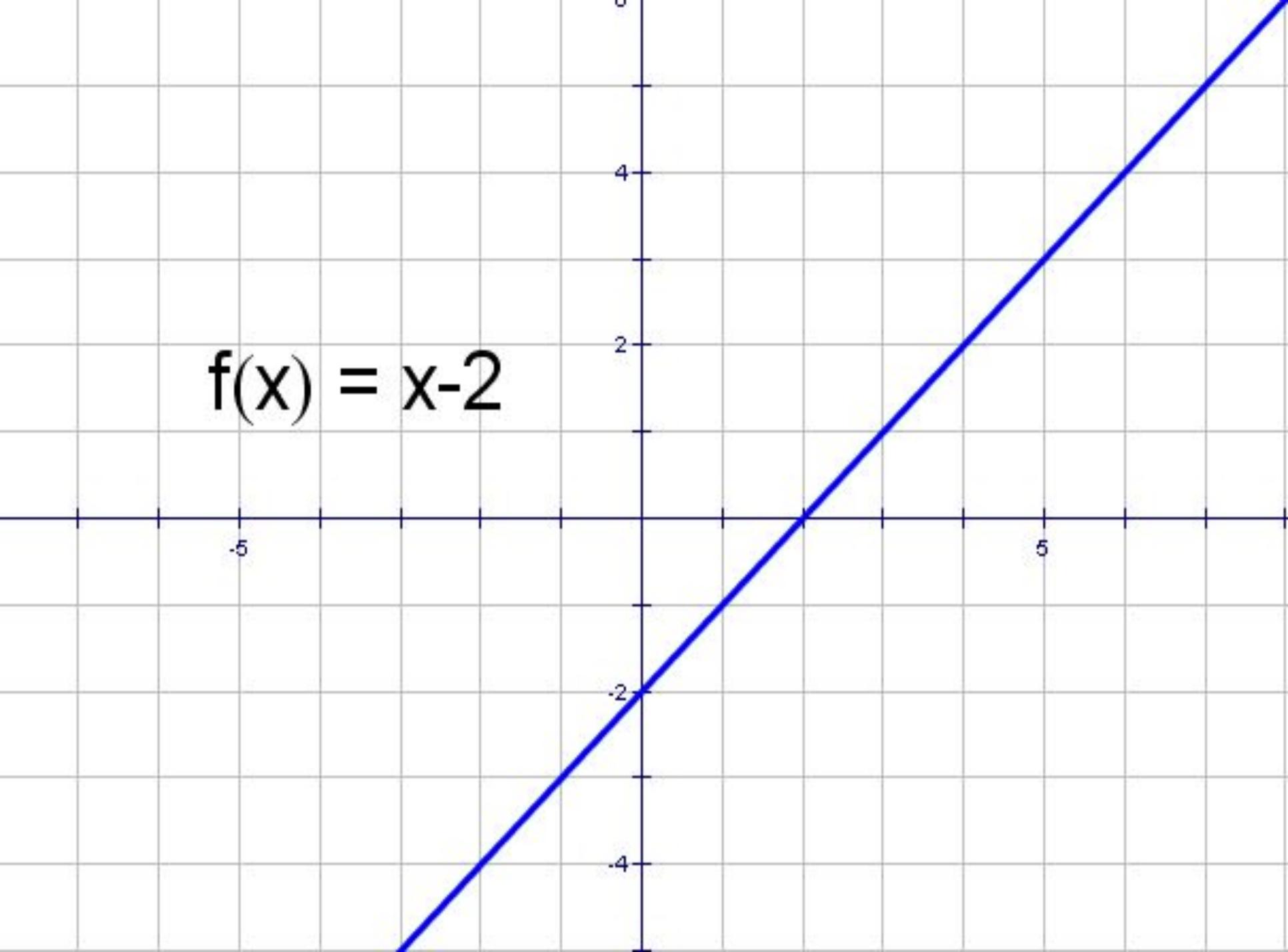


$$y = x - 2$$

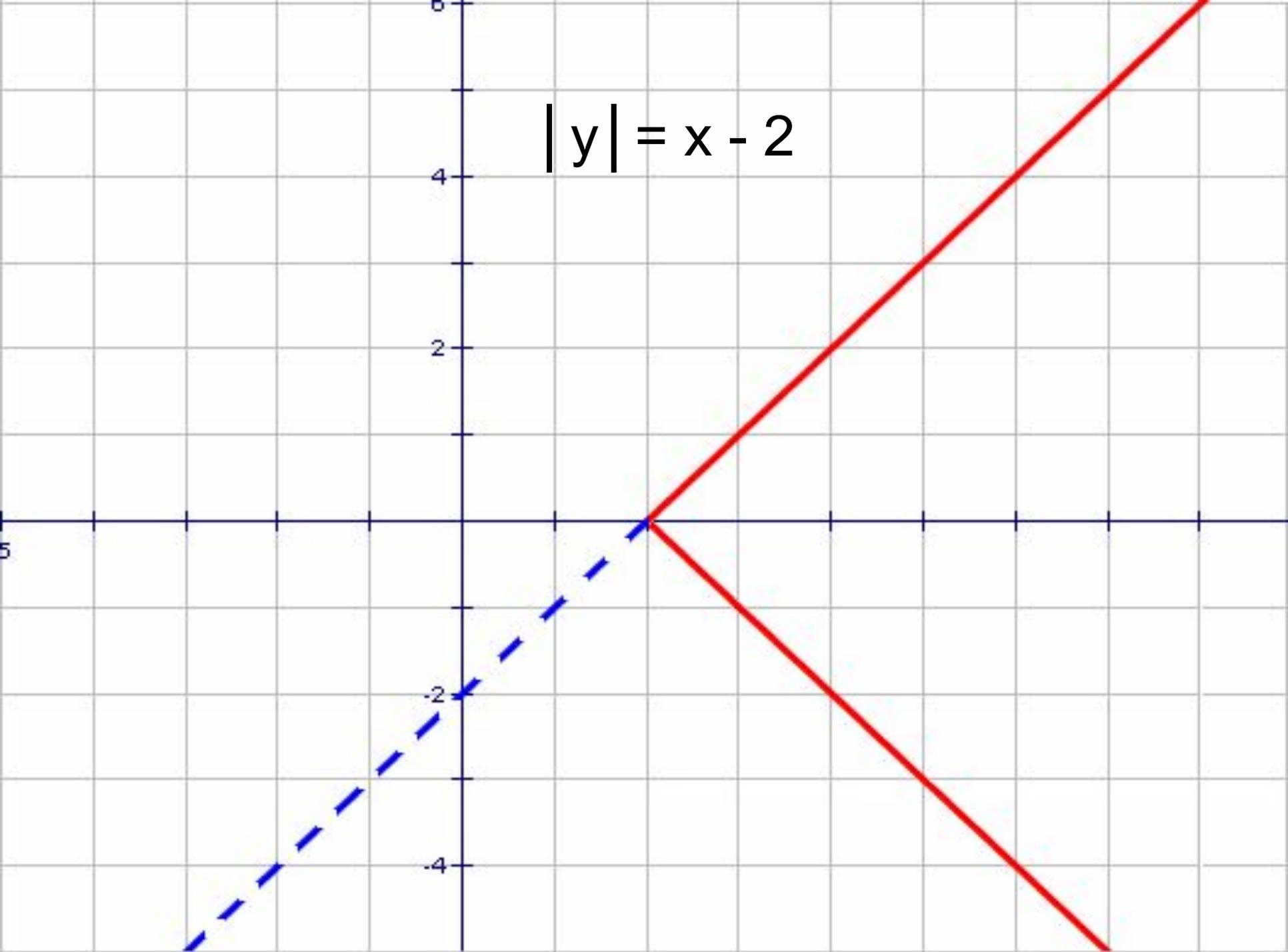
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$$|y| = x - 2$$

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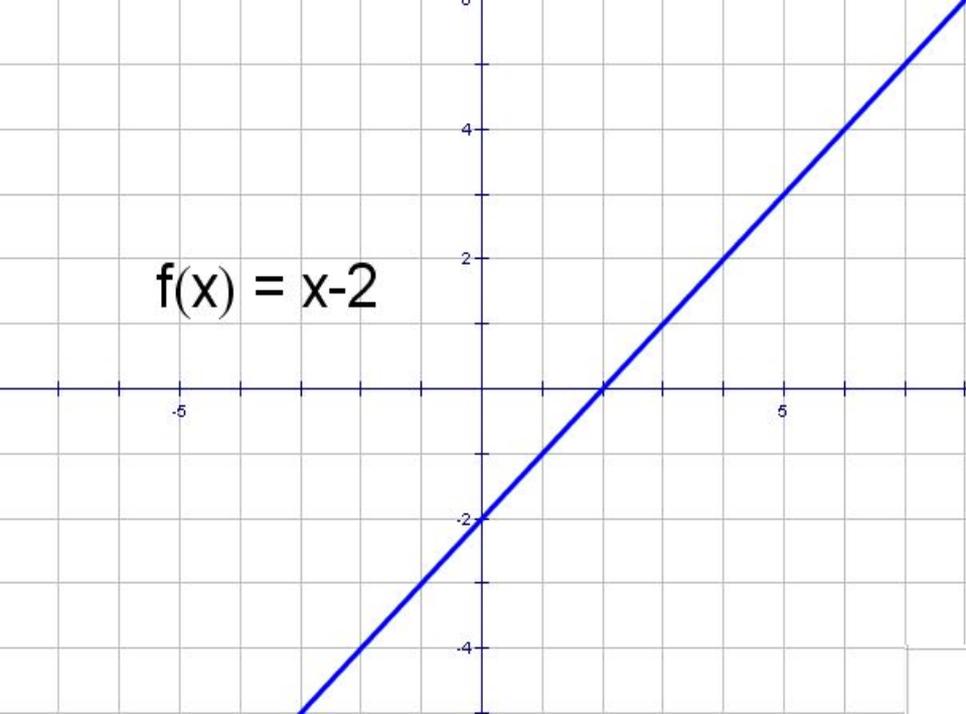


$$|y| = x - 2$$

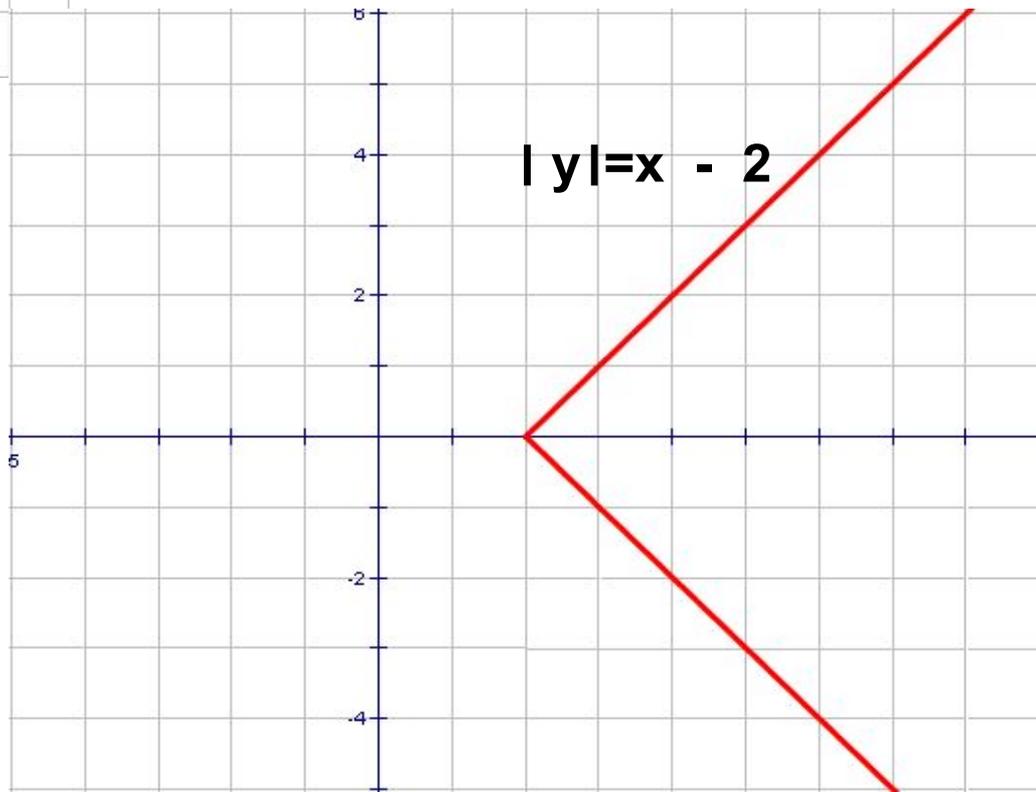




$$f(x) = x - 2$$



$$|y| = x - 2$$



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

И

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

$$f(x) = x^2 - 2 \cdot x - 3$$

-5

6

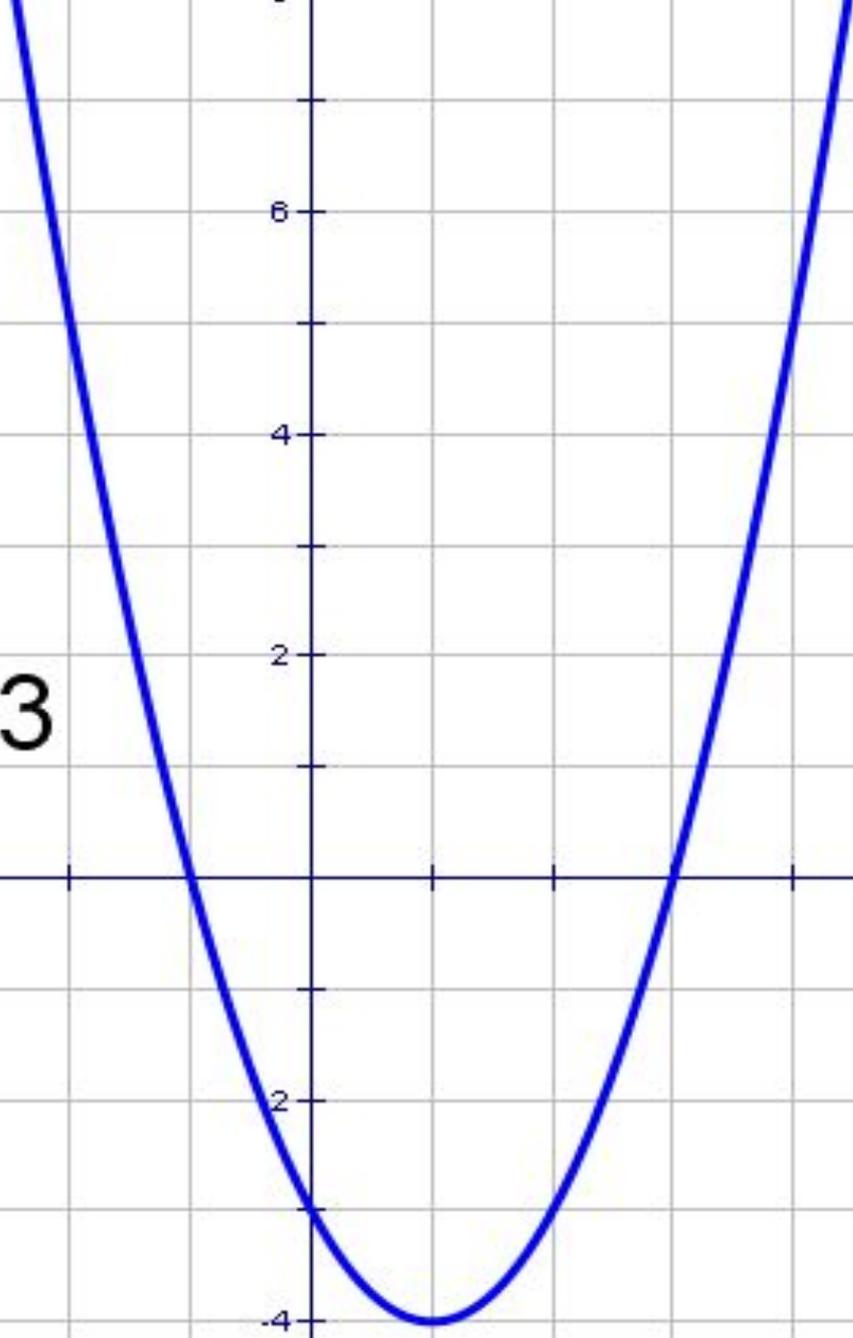
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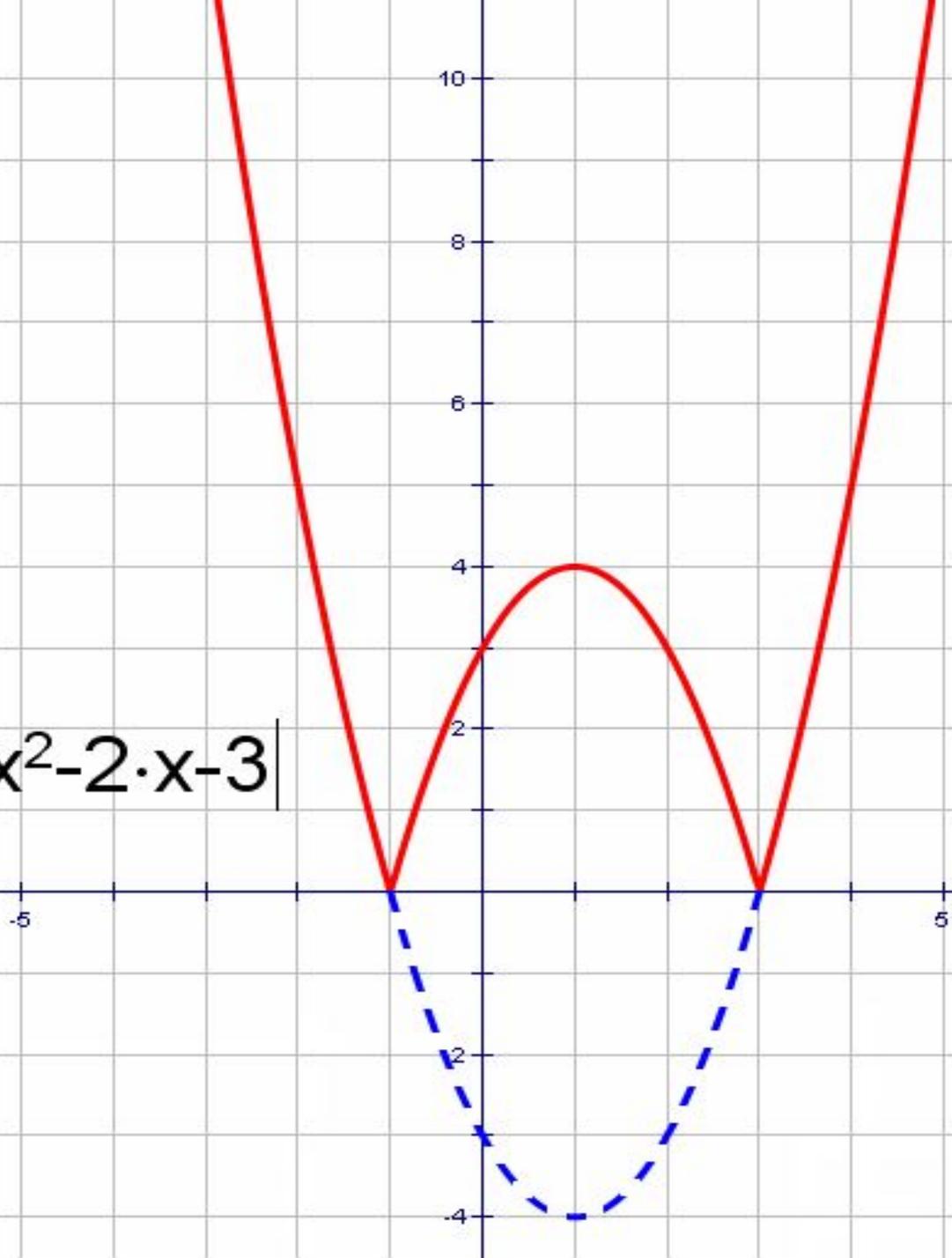
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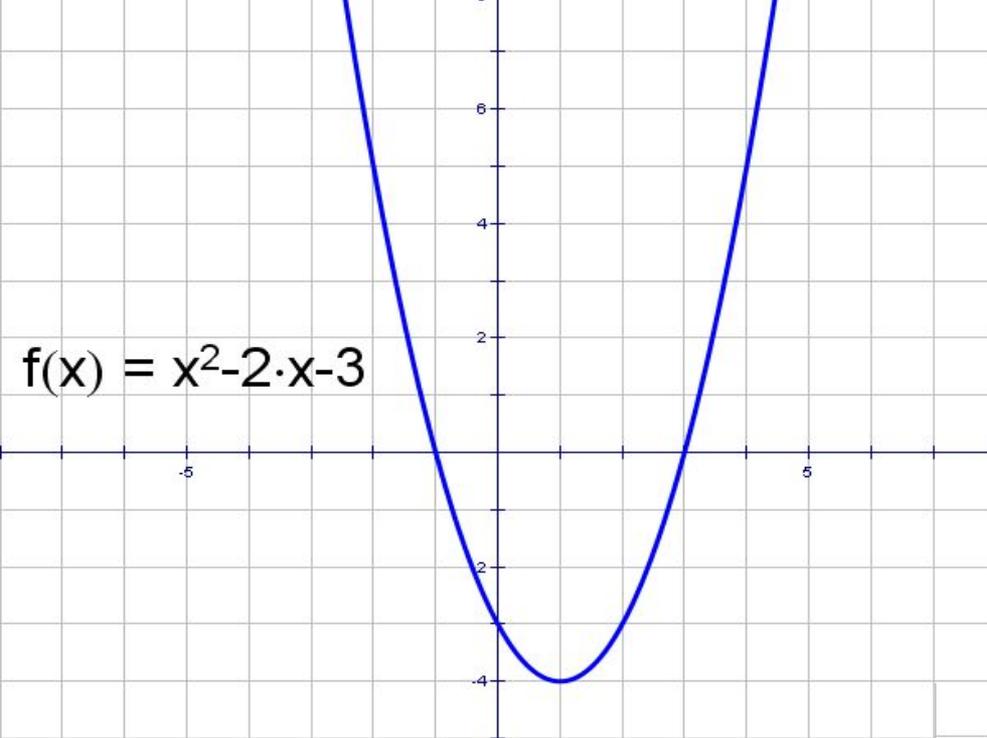
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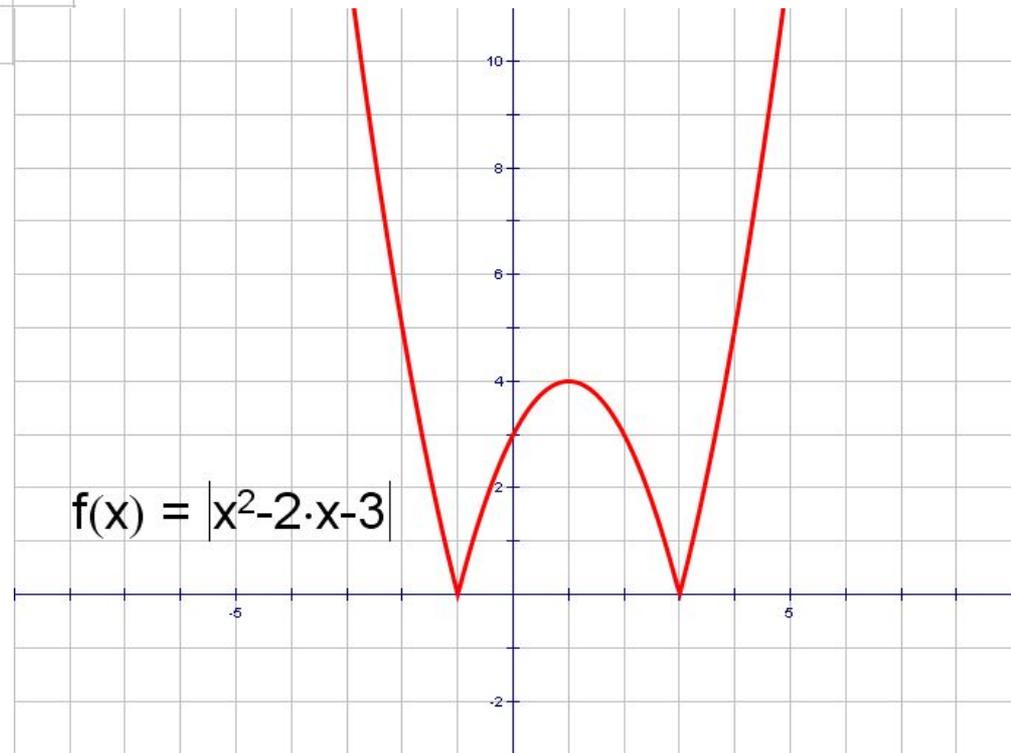
$$f(x) = |x^2 - 2x - 3|$$



$$f(x) = x^2 - 2 \cdot x - 3$$



$$f(x) = |x^2 - 2 \cdot x - 3|$$



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

и

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

$$f(x) = x^2 - 2 \cdot x - 3$$

-5

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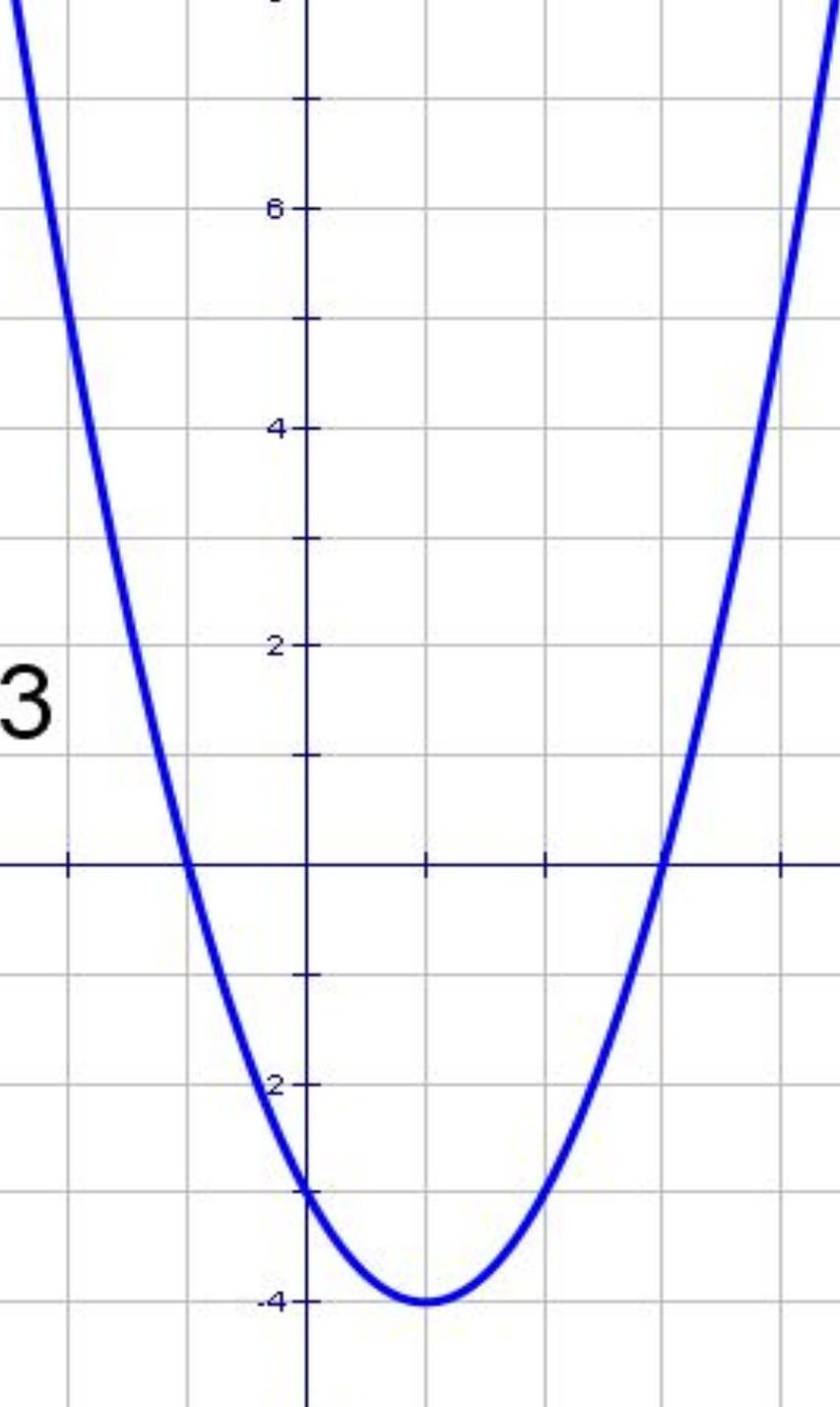
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$$f(x) = |x|^2 - 2 \cdot |x| - 3$$

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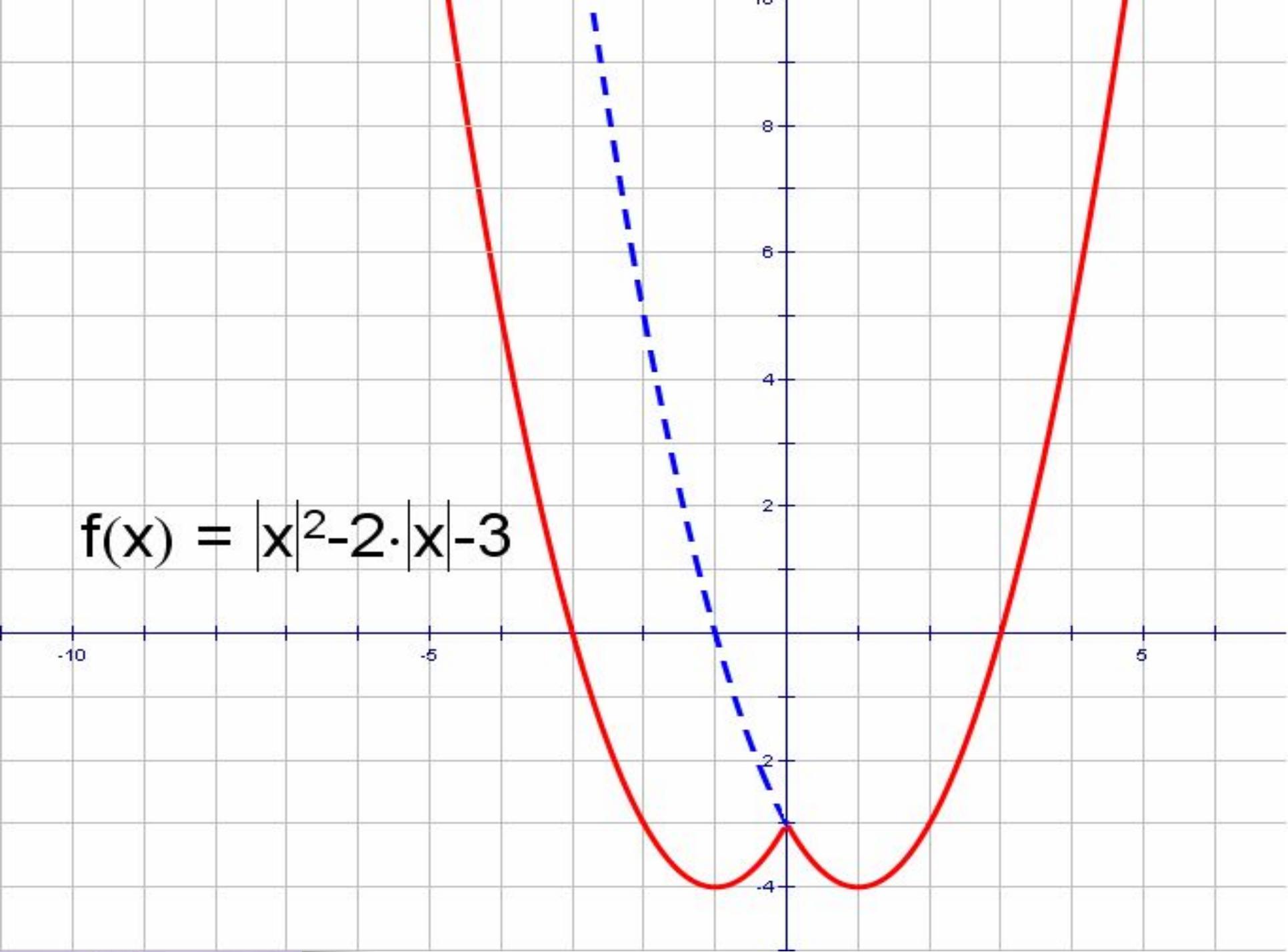
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$$f(x) = x^2 - 2 \cdot x - 3$$

-5

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4

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-4

$$f(x) = |x|^2 - 2 \cdot |x| - 3$$

-10

-5

5

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6

4

2

-2

-4

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

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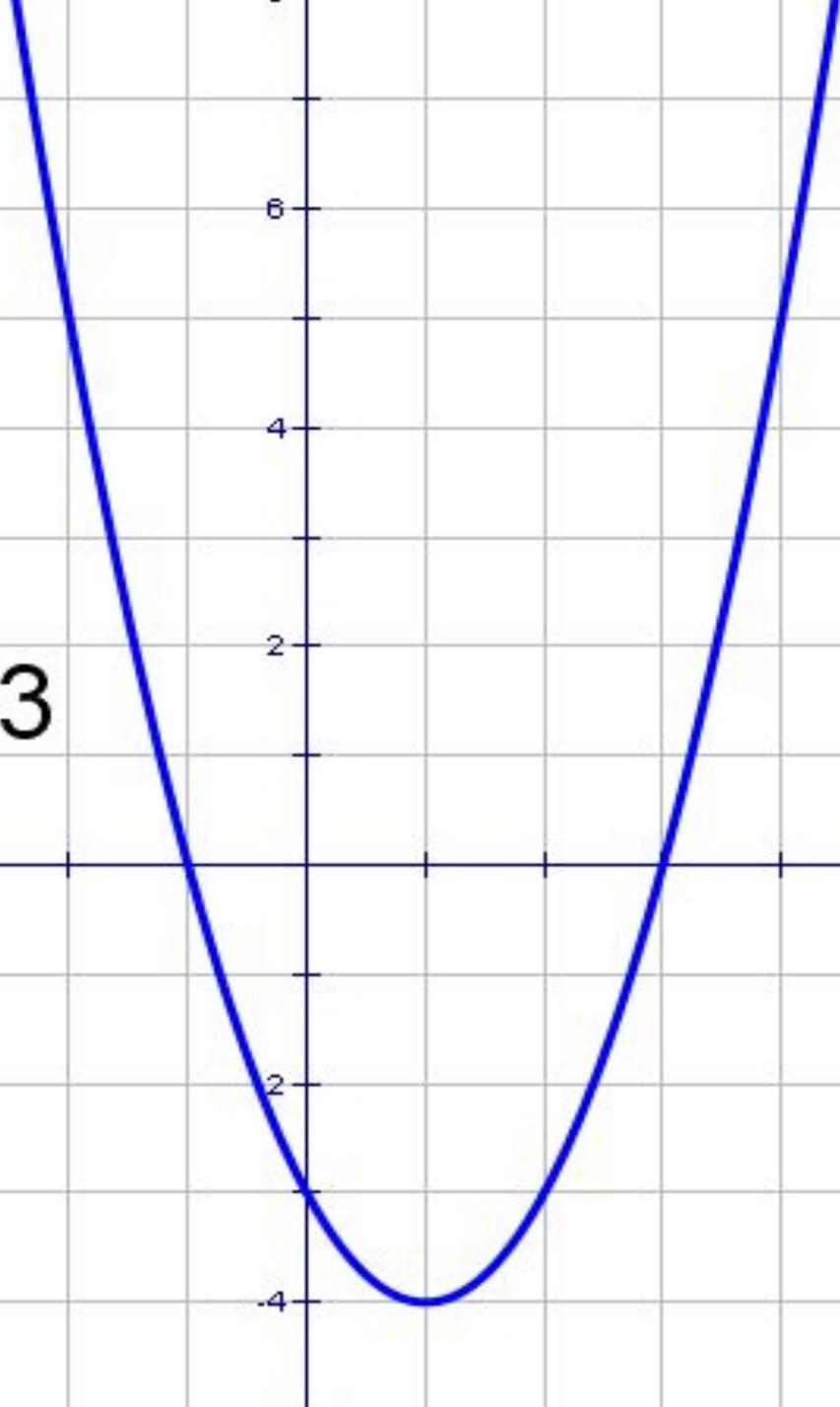
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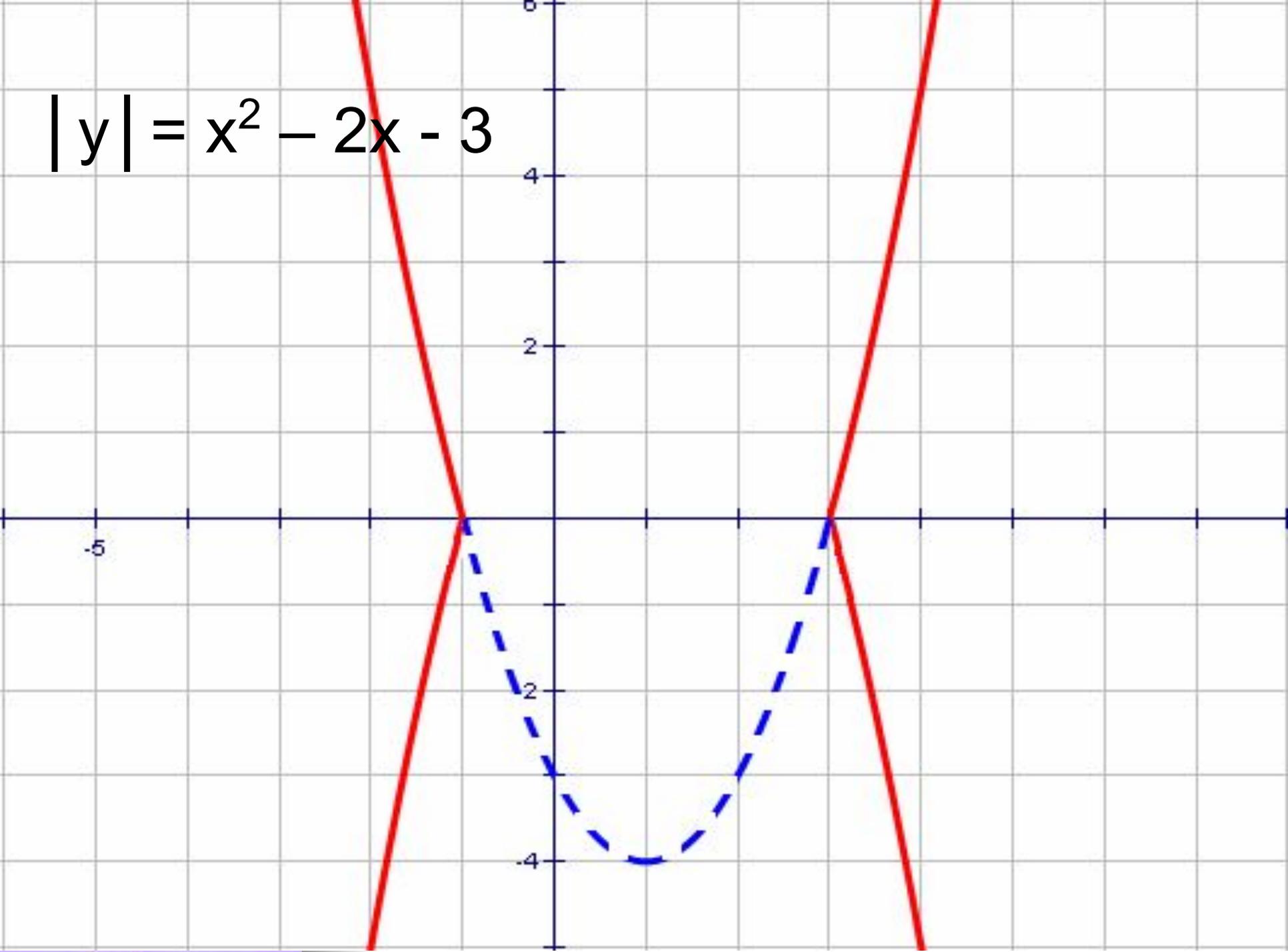
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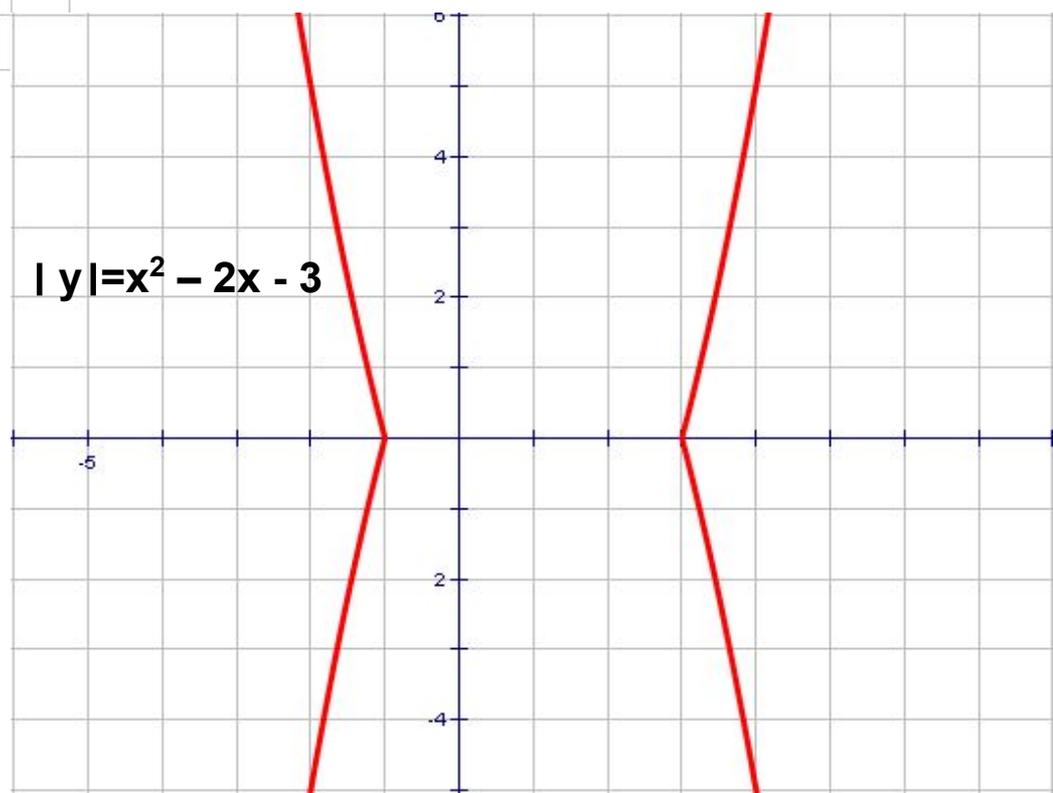
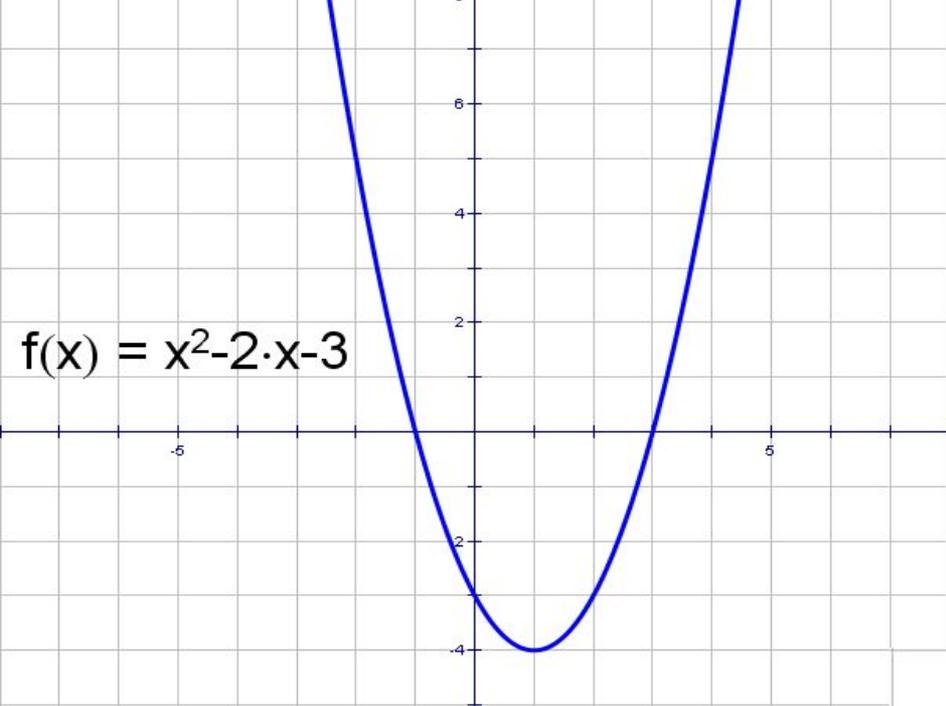
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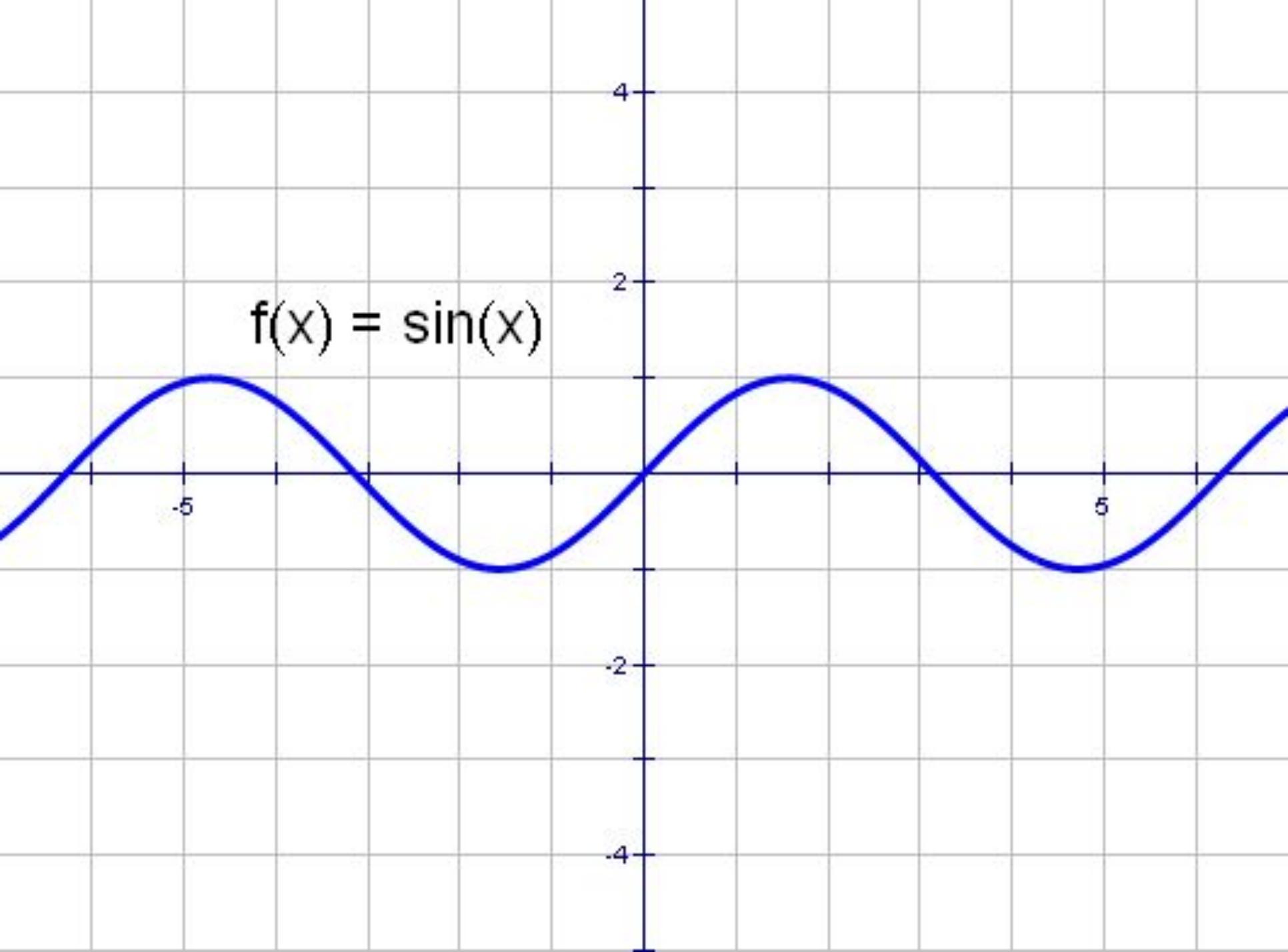
$$|y| = x^2 - 2x - 3$$



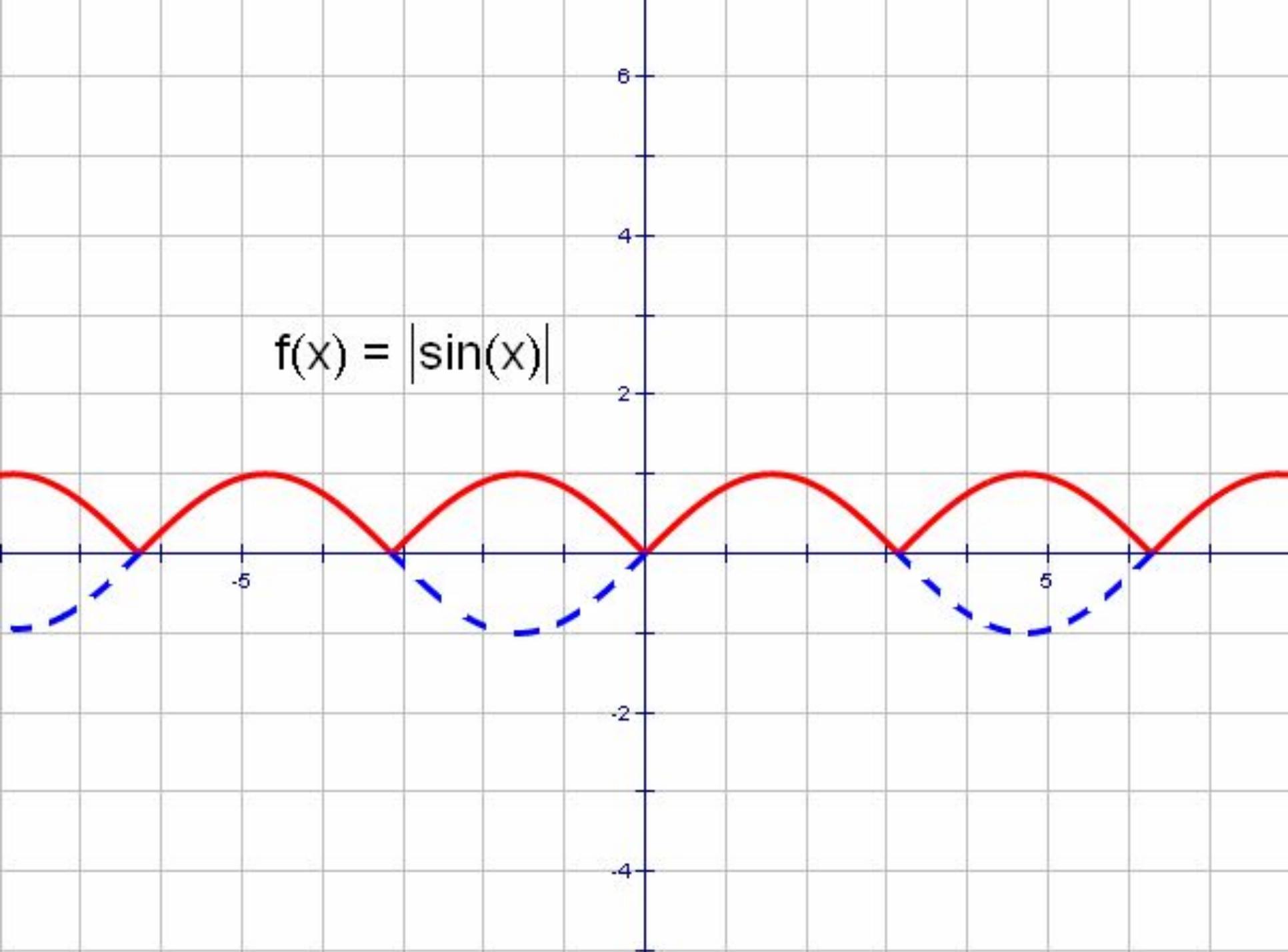


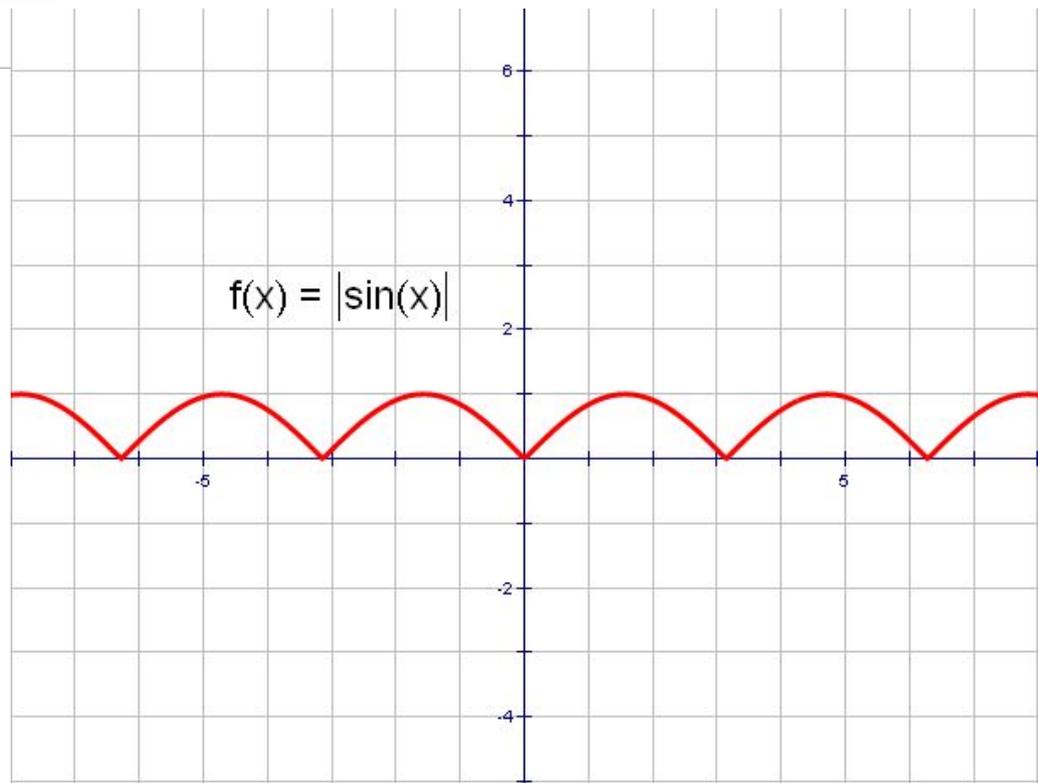
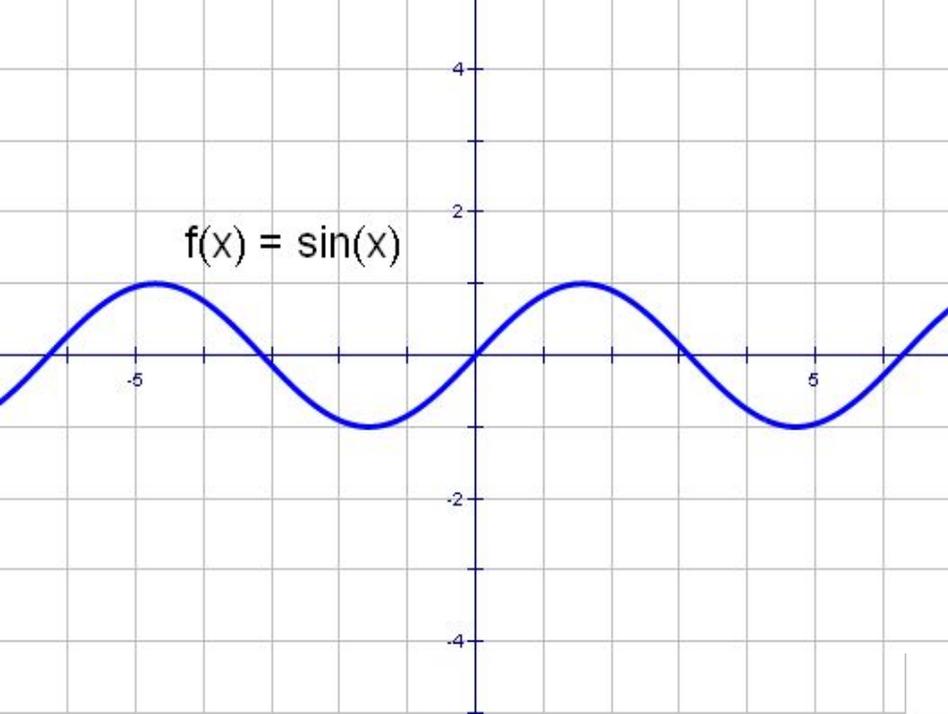
$y = \sin x$ и $y = |\sin x|$

$$f(x) = \sin(x)$$



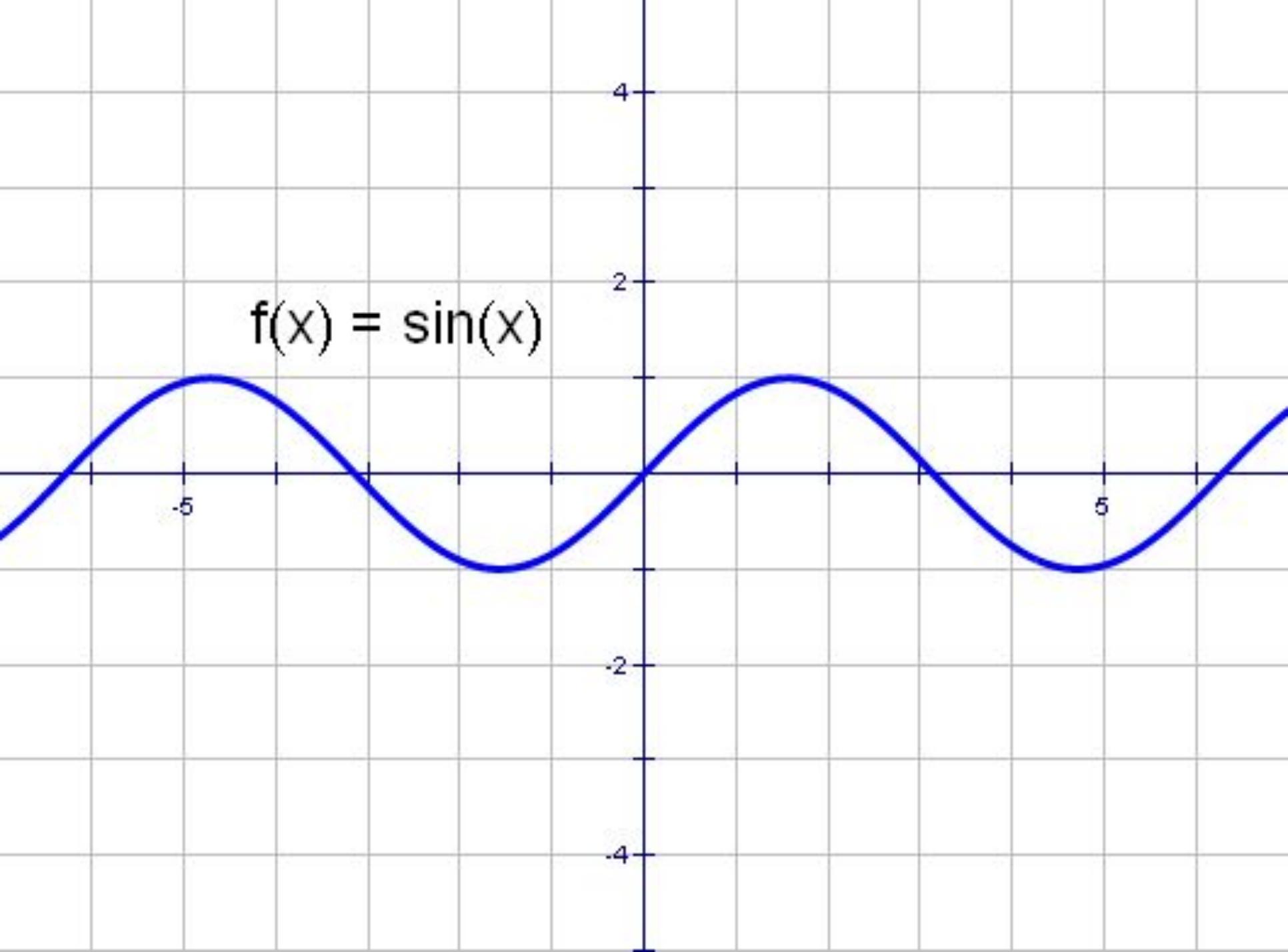
$$f(x) = |\sin(x)|$$



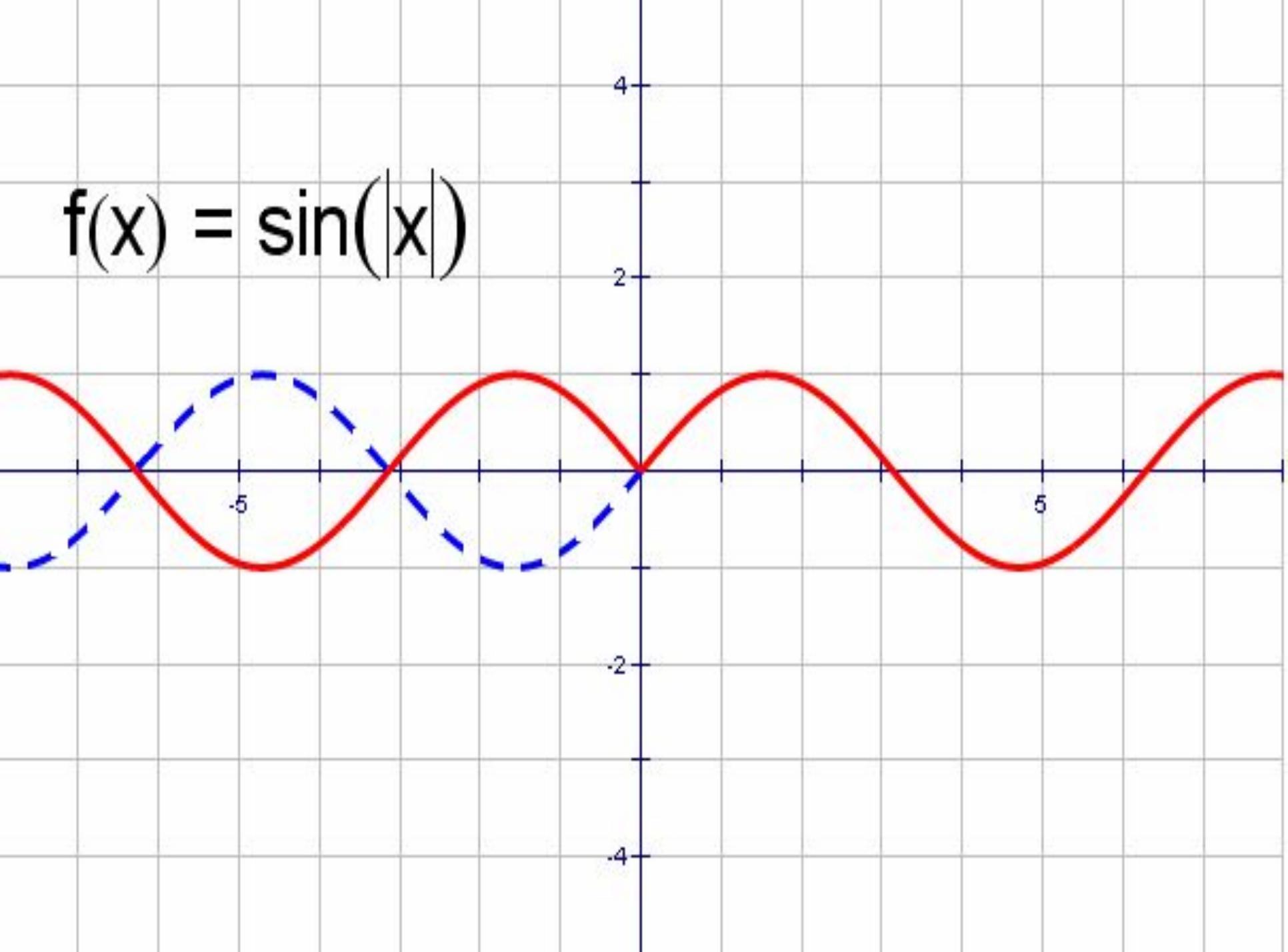


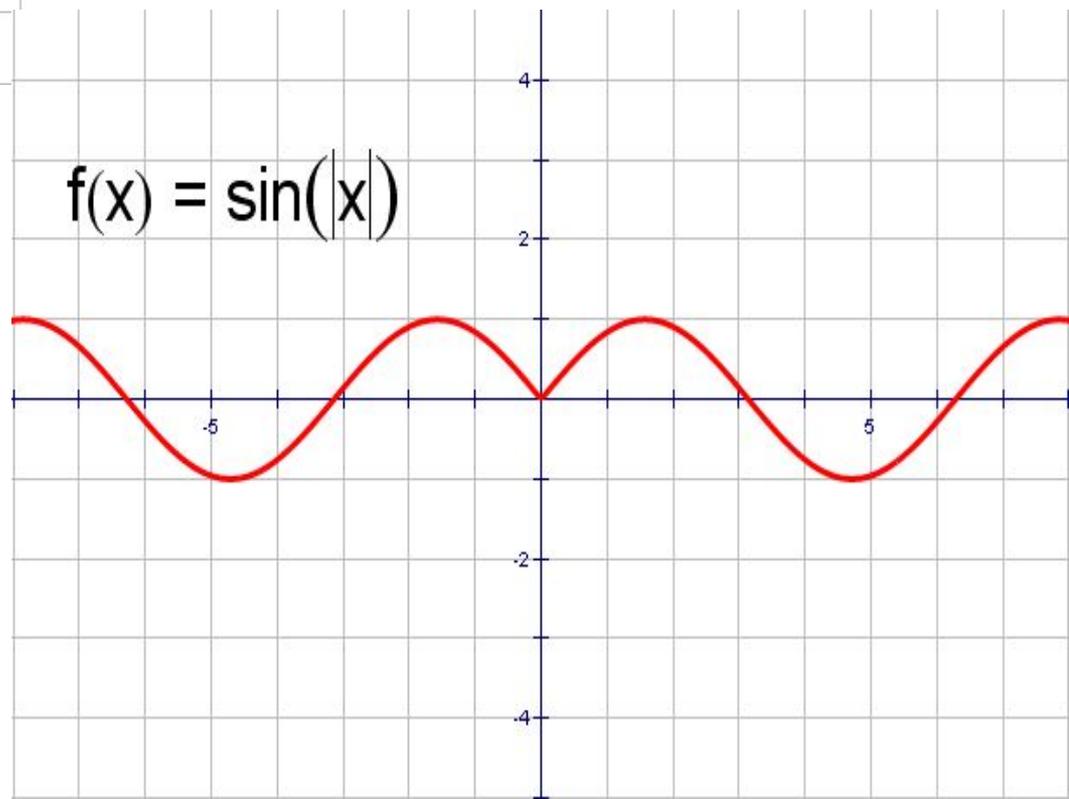
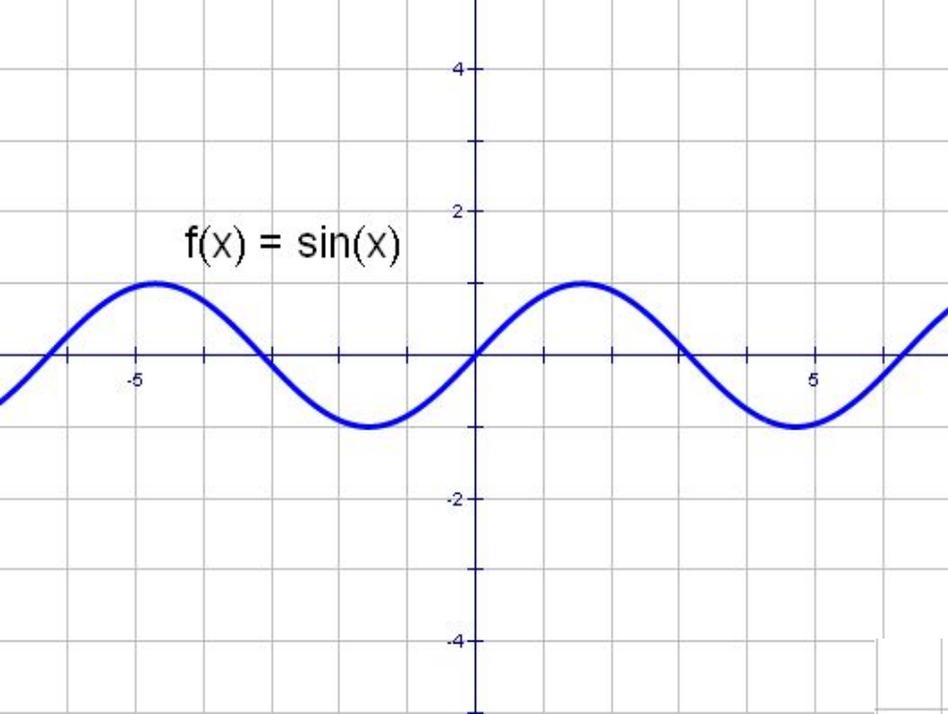
$y = \sin x$ и $y = \sin |x|$

$$f(x) = \sin(x)$$



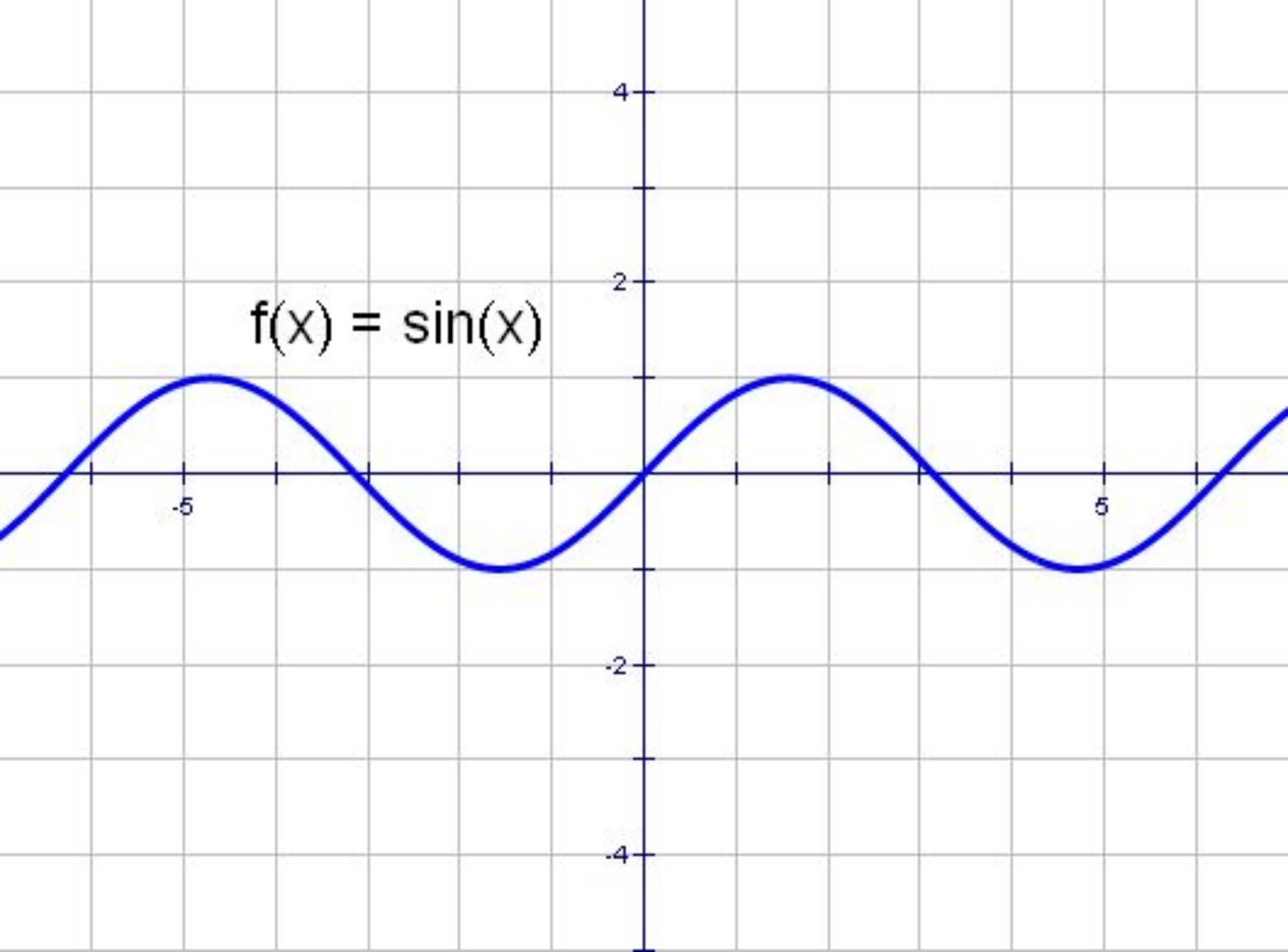
$$f(x) = \sin(|x|)$$



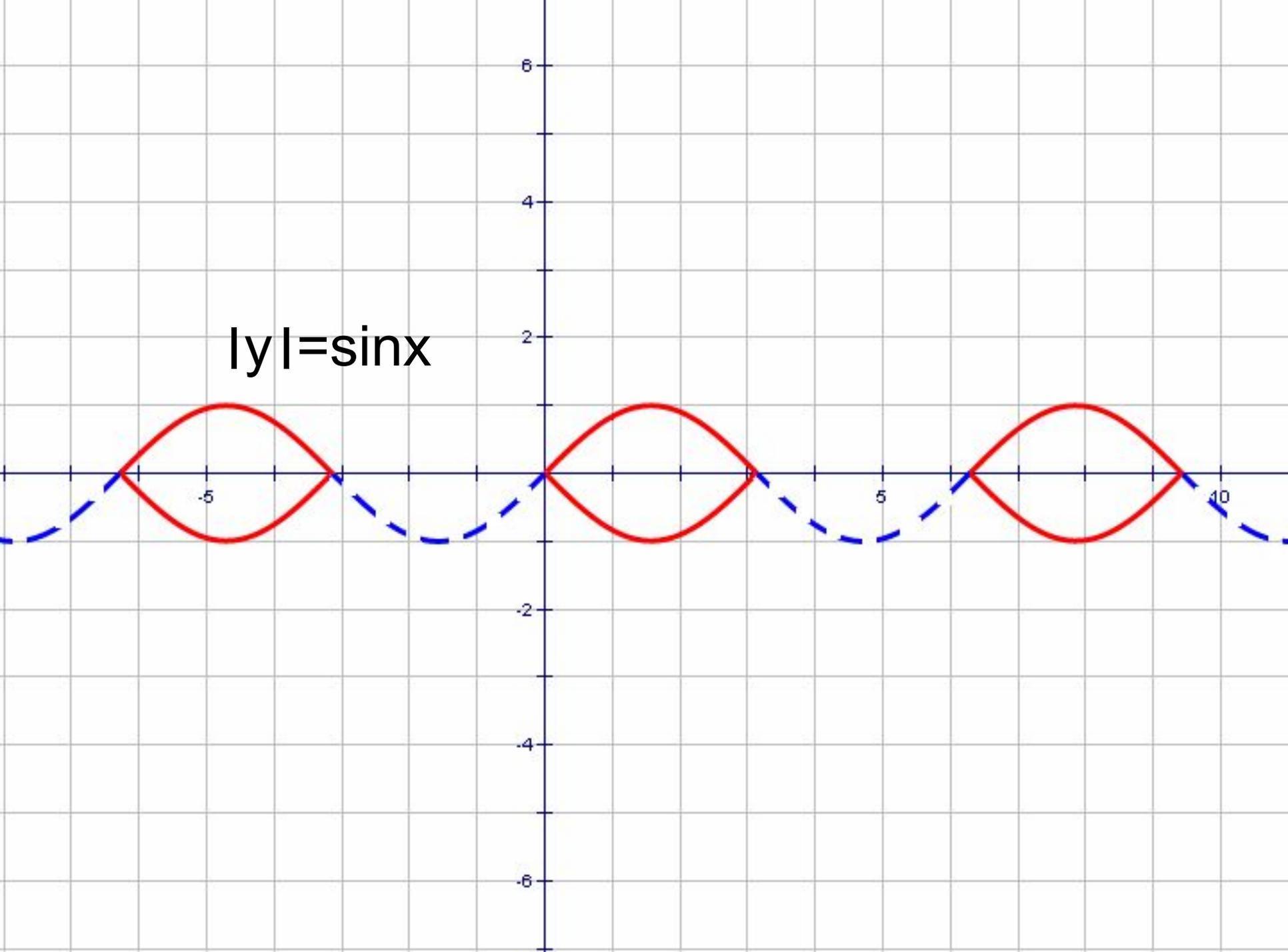


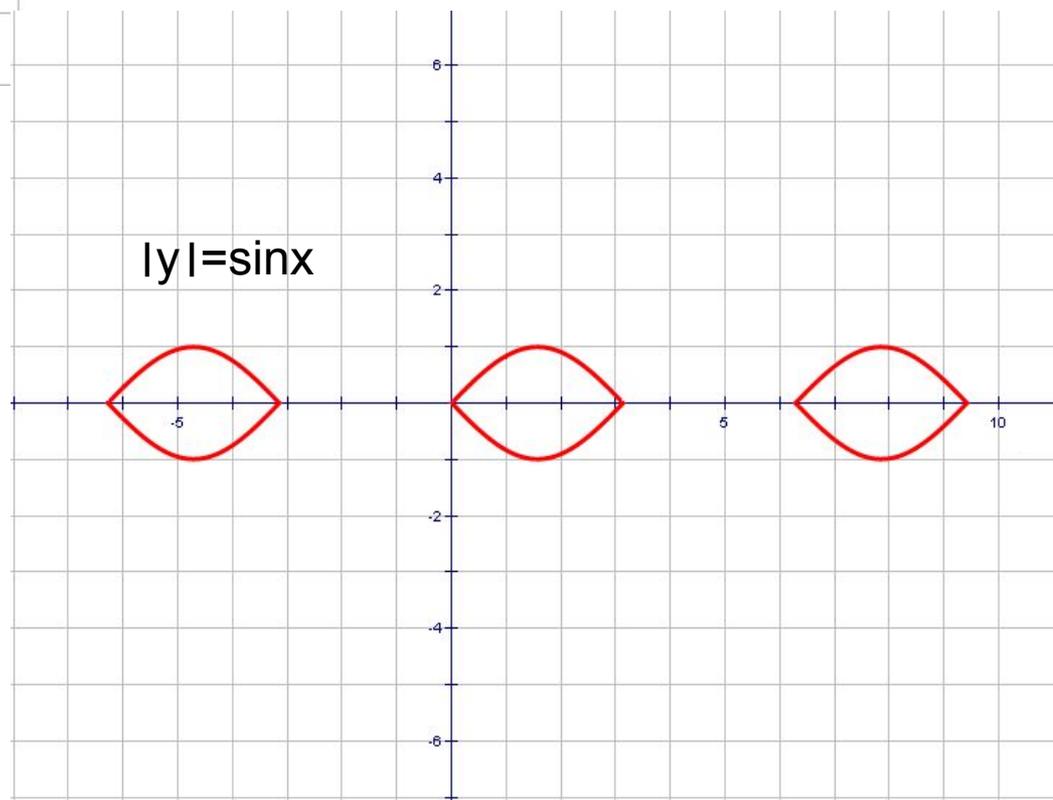
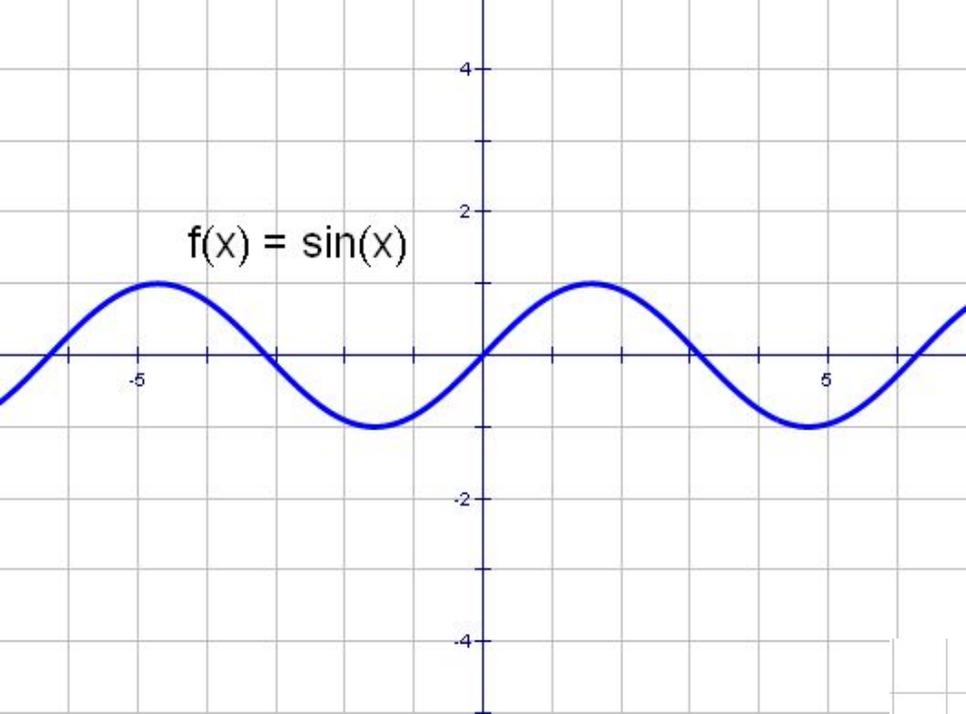
$$y = \sin x \quad \text{и} \quad |y| = \sin x$$

$$f(x) = \sin(x)$$



$$|y| = \sin x$$







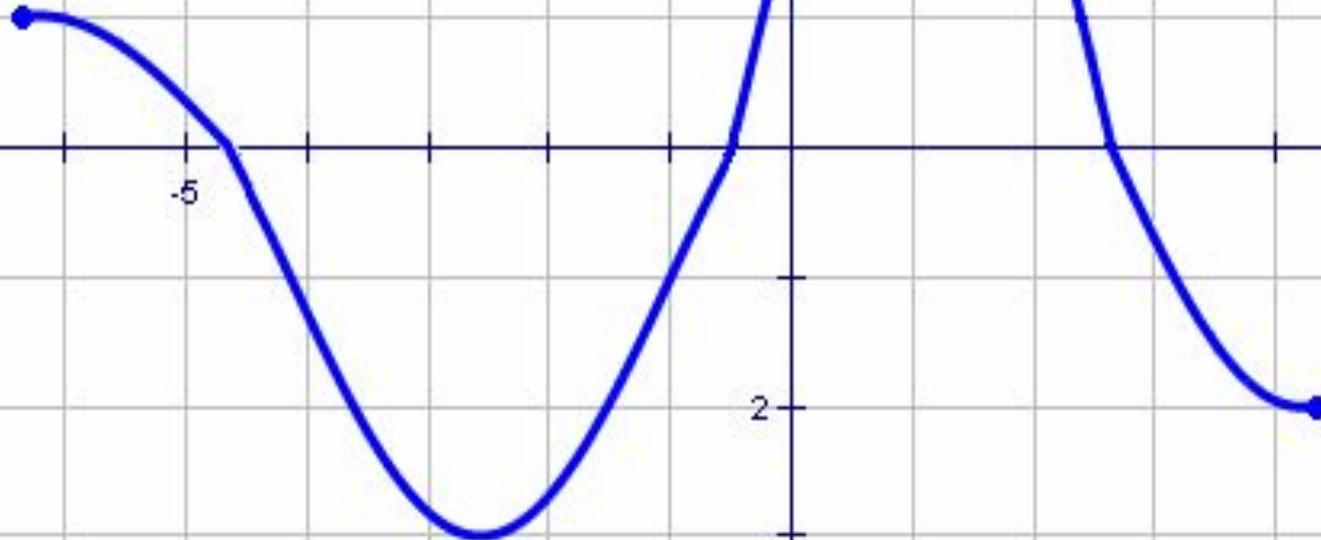
Подведение итогов (обобщение).

$$y = f(x)$$

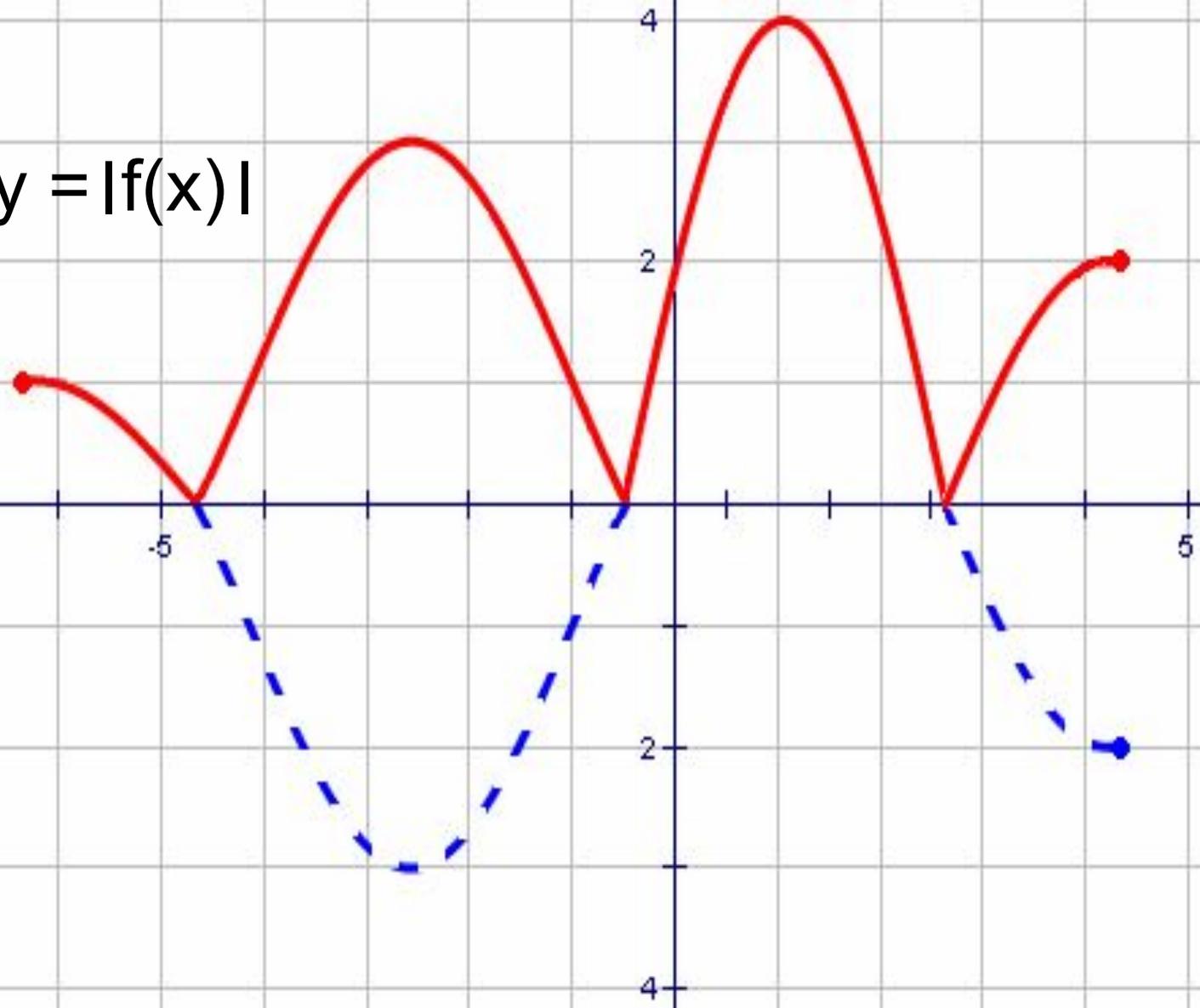
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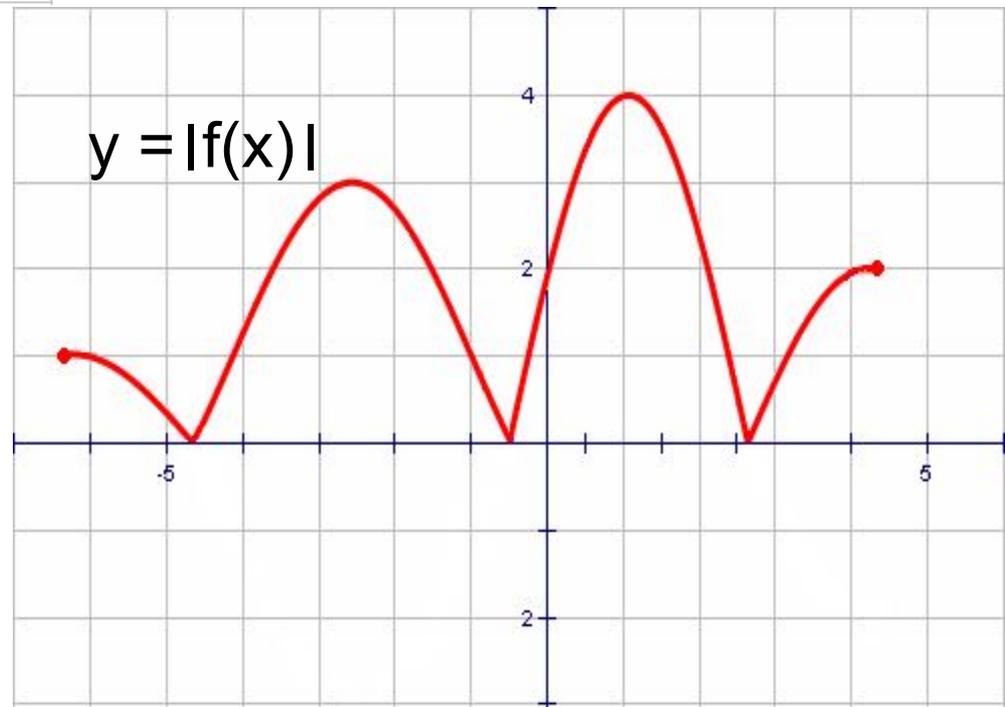
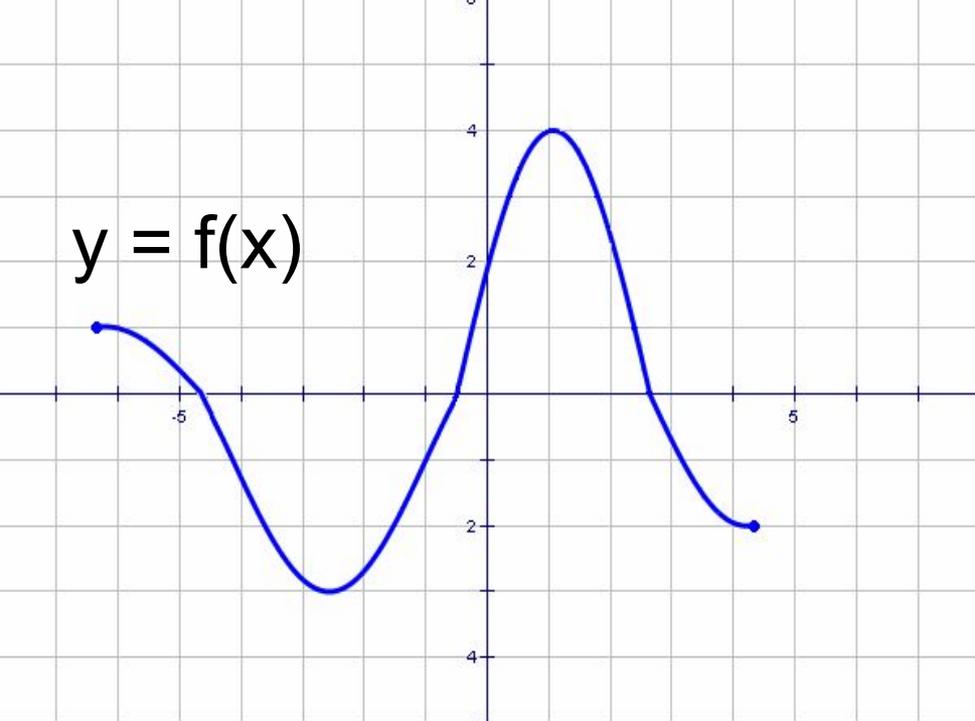
$$y = |f(x)|$$

$$y = f(x)$$



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



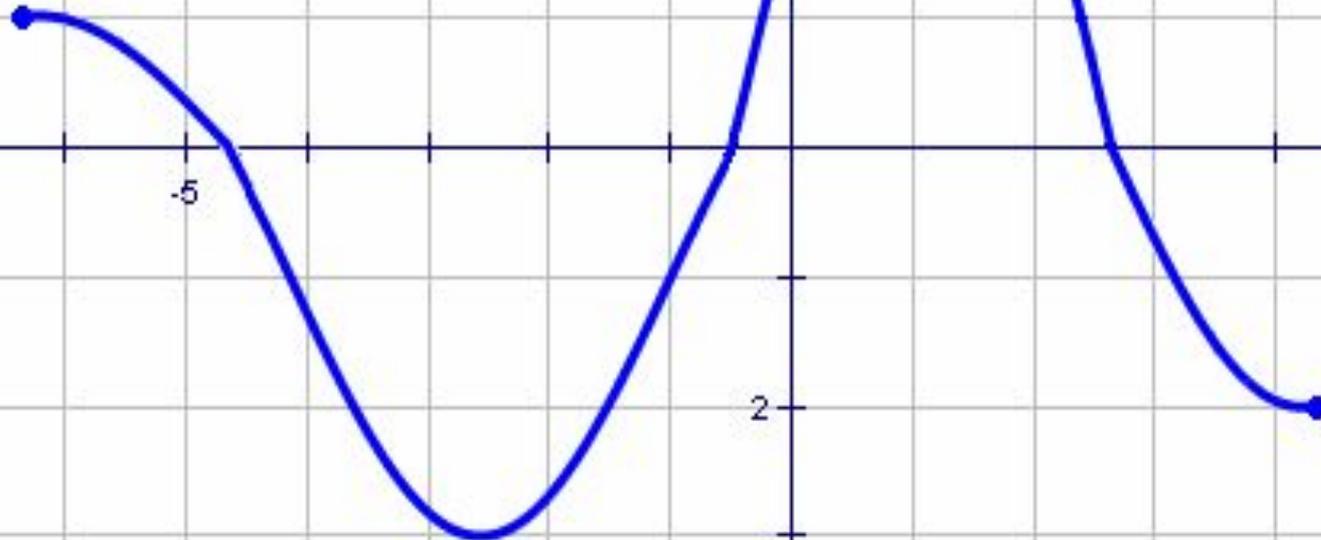


$$y = f(x)$$

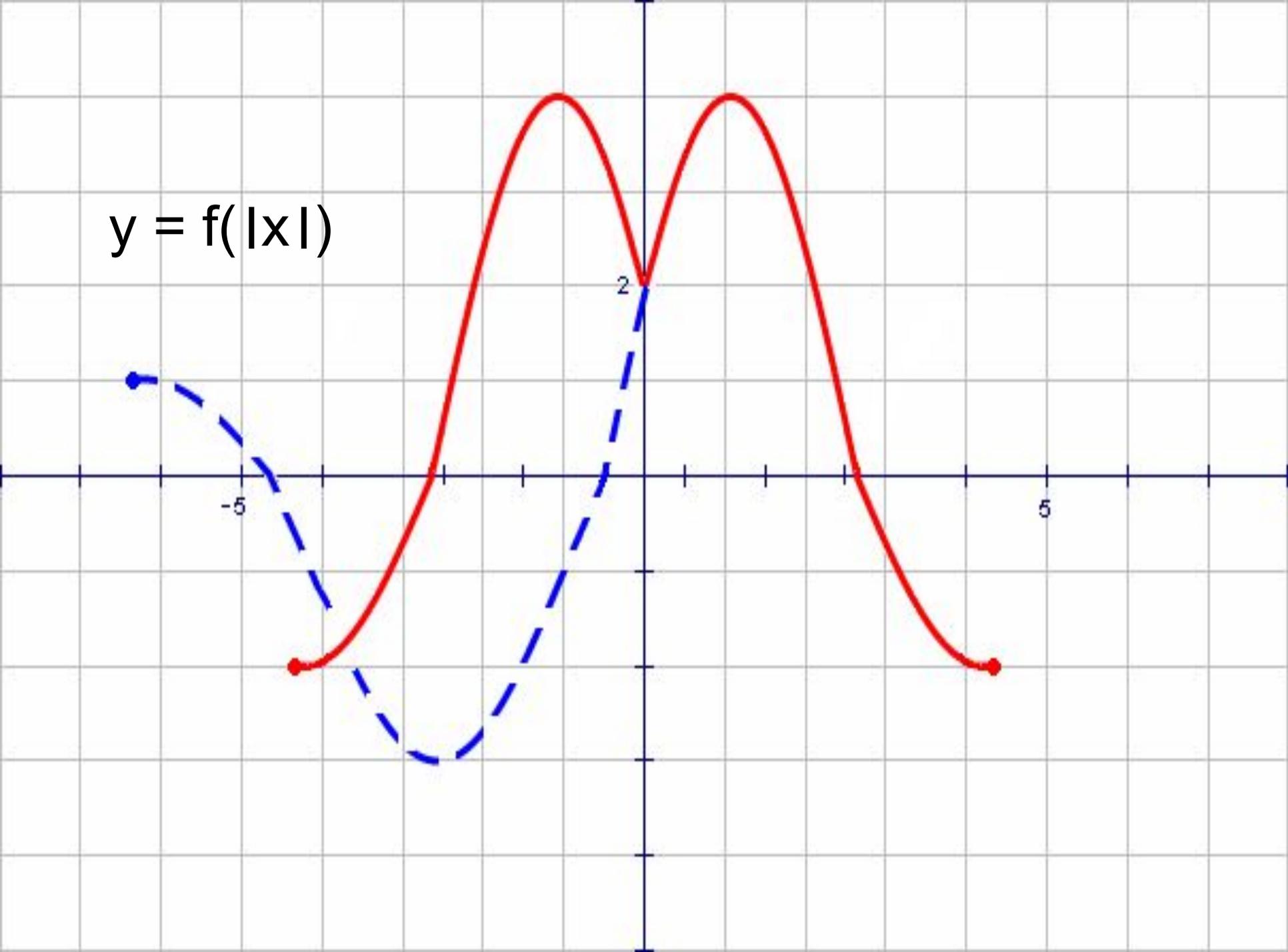
и

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

$$y = f(x)$$

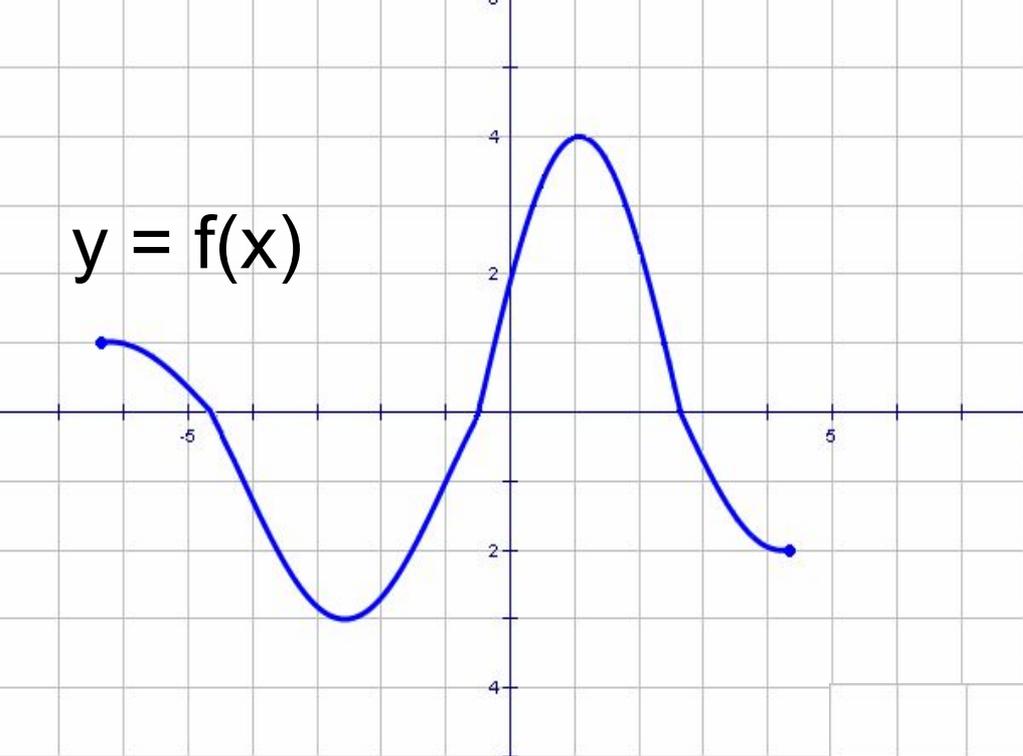


$$y = f(|x|)$$

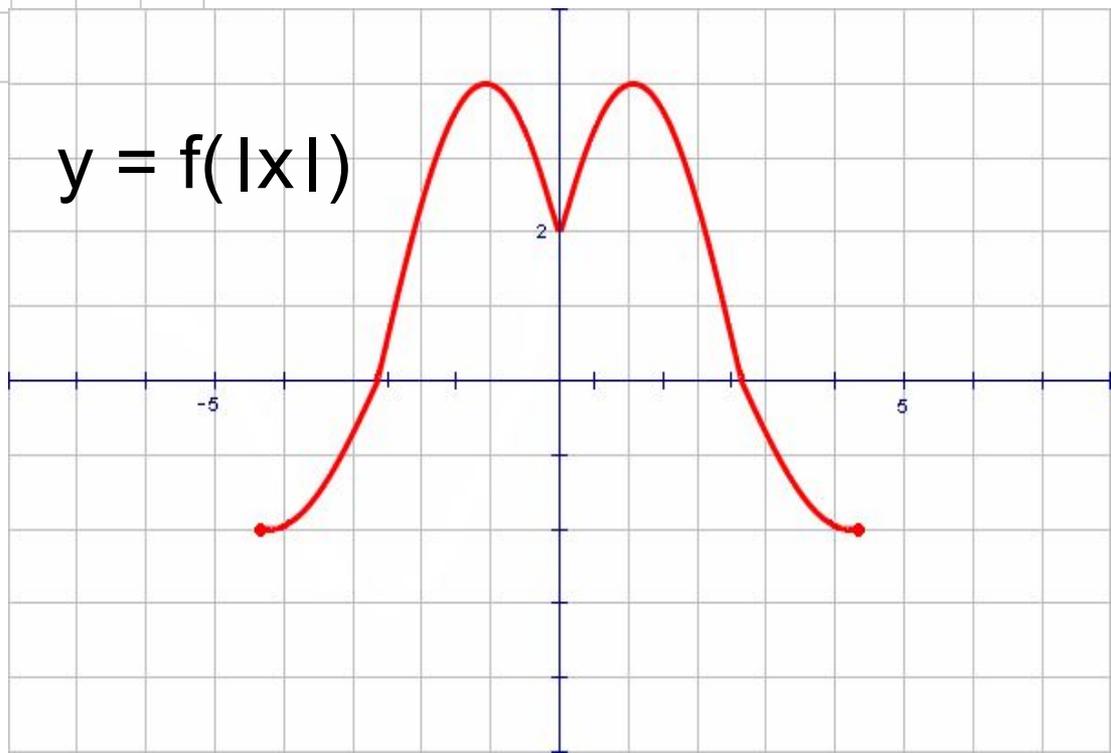




$$y = f(x)$$



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

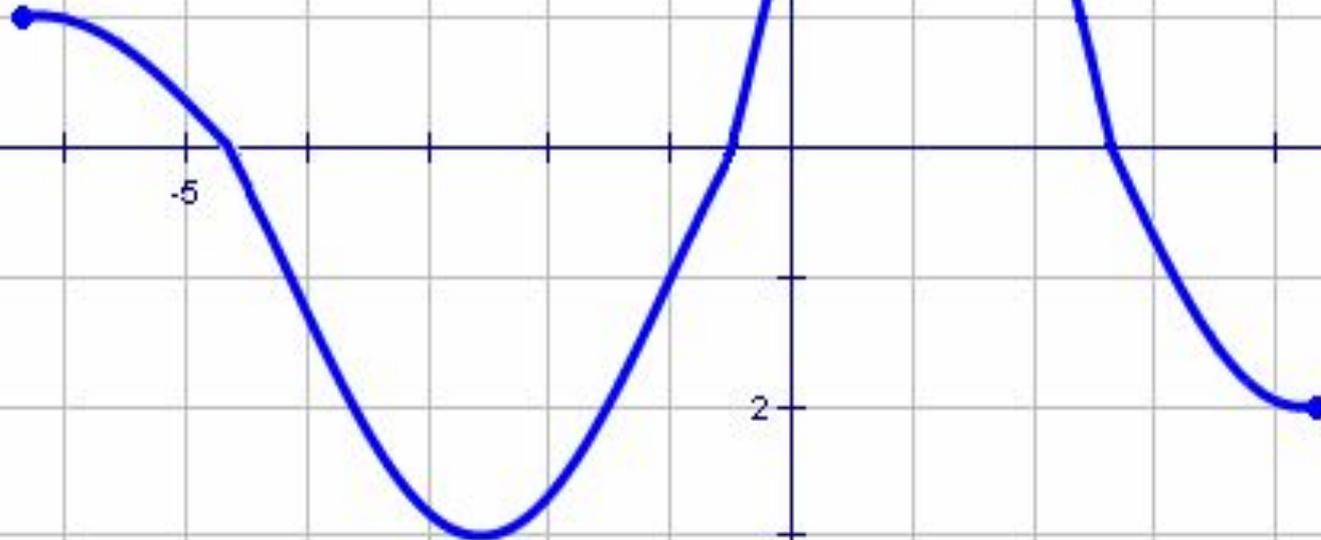


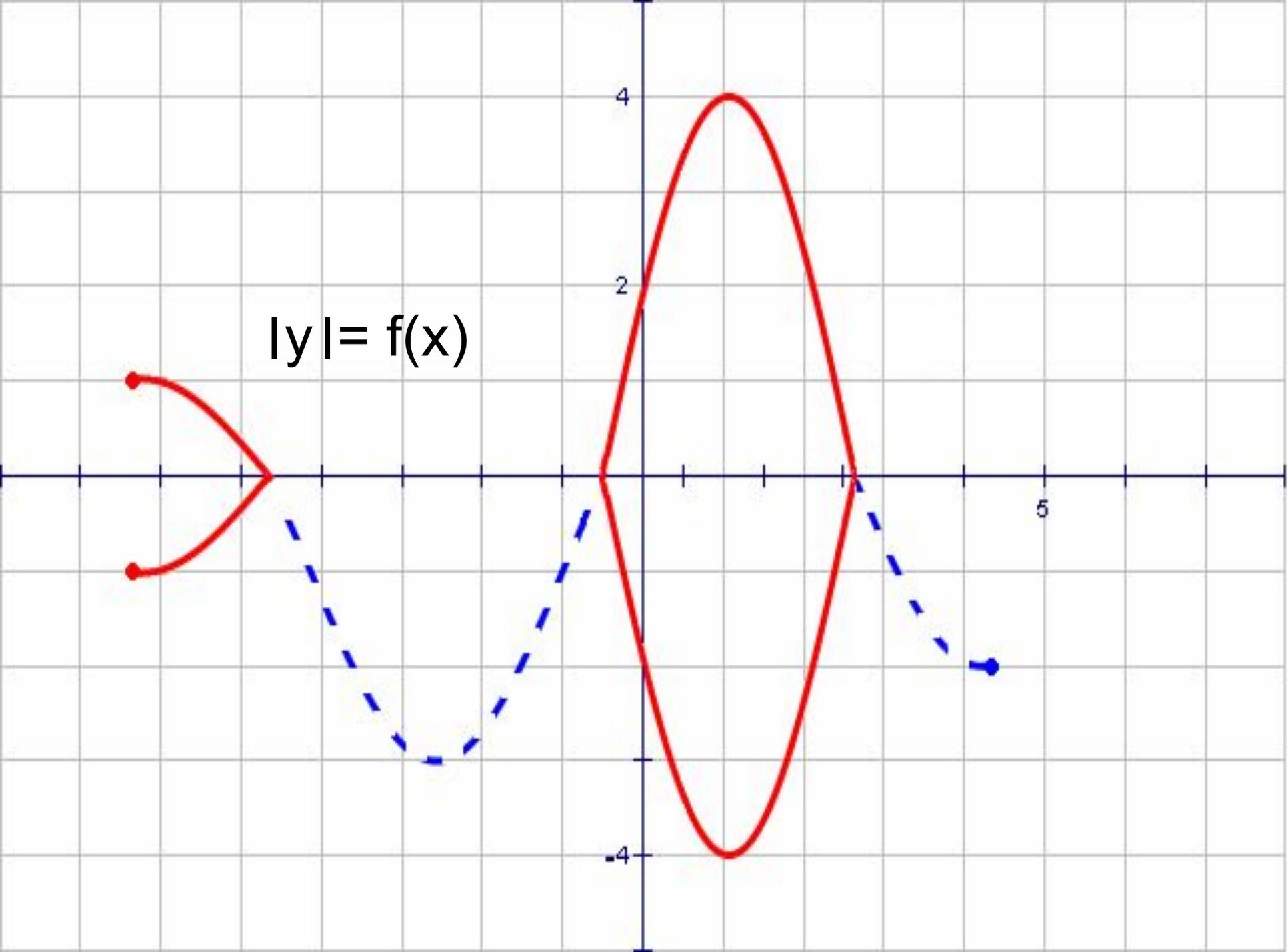
$$y = f(x)$$

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

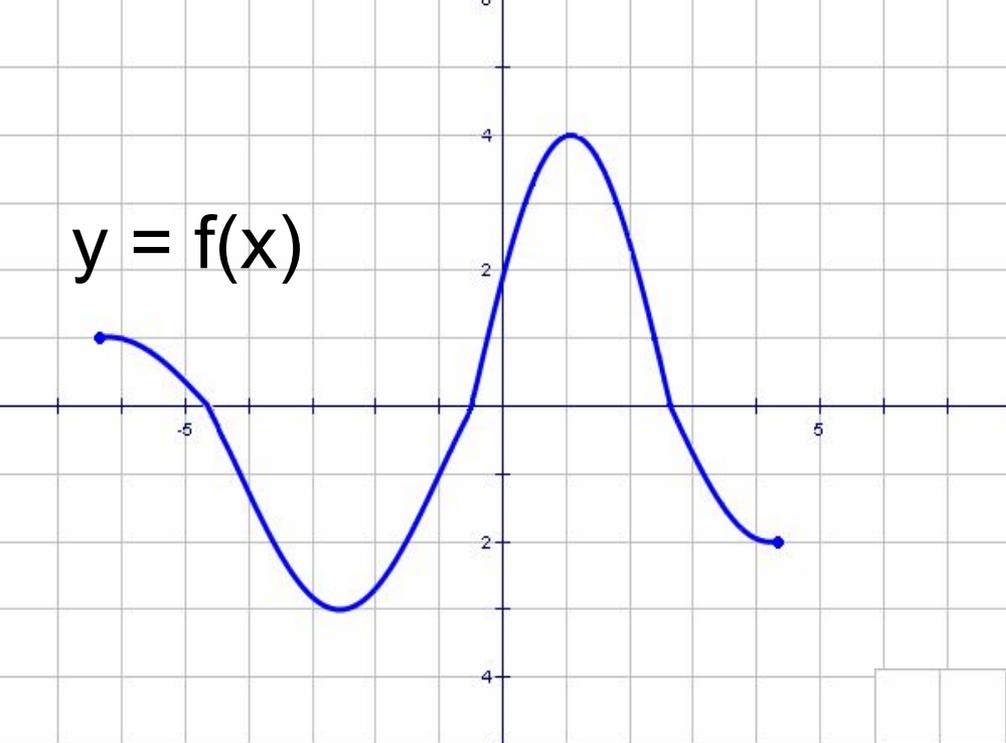
$$y = f(x)$$



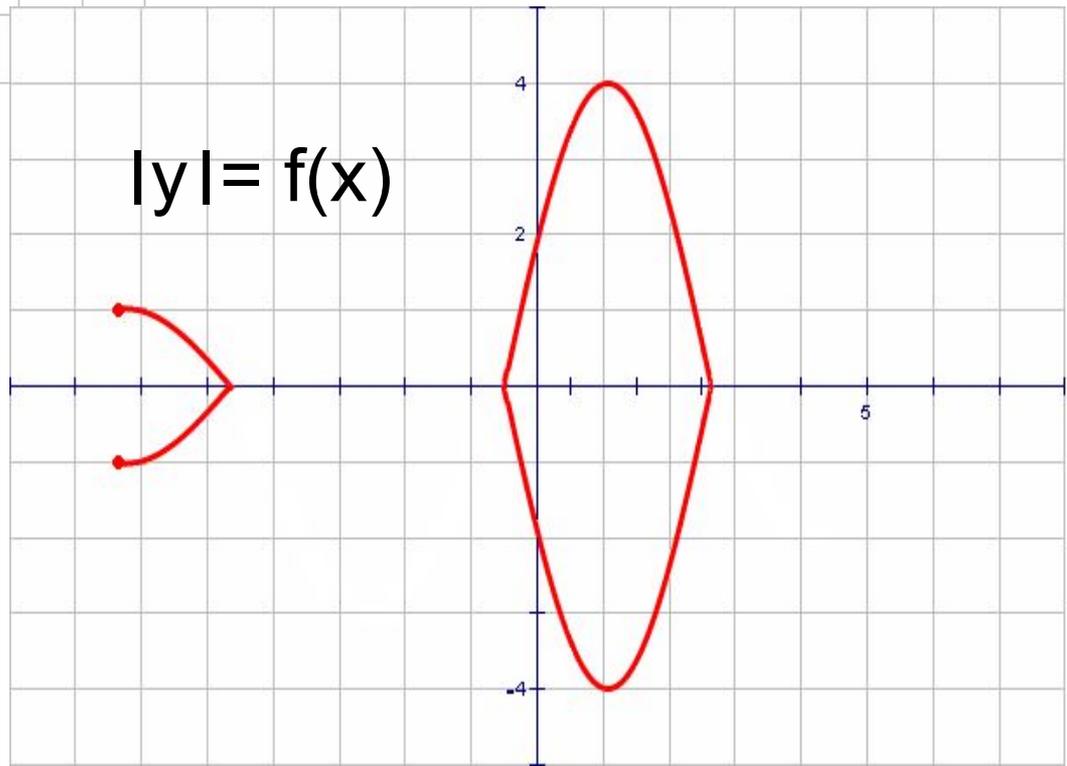




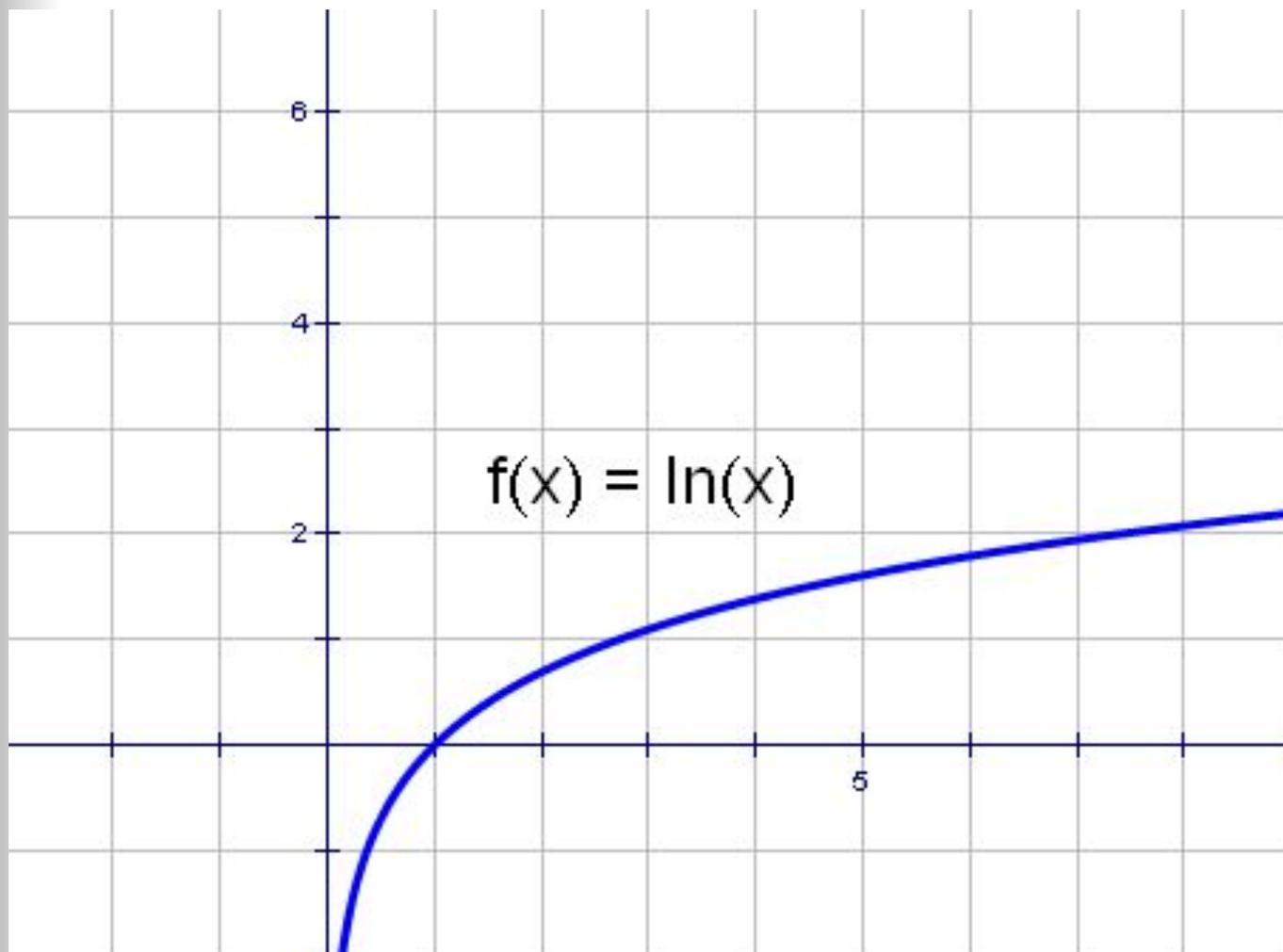
$$y = f(x)$$



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



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



Попробуйте самостоятельно
построить графики:

1. $y = |\ln x|$

2. $y = \ln |x|$

3. $|y| = \ln x$

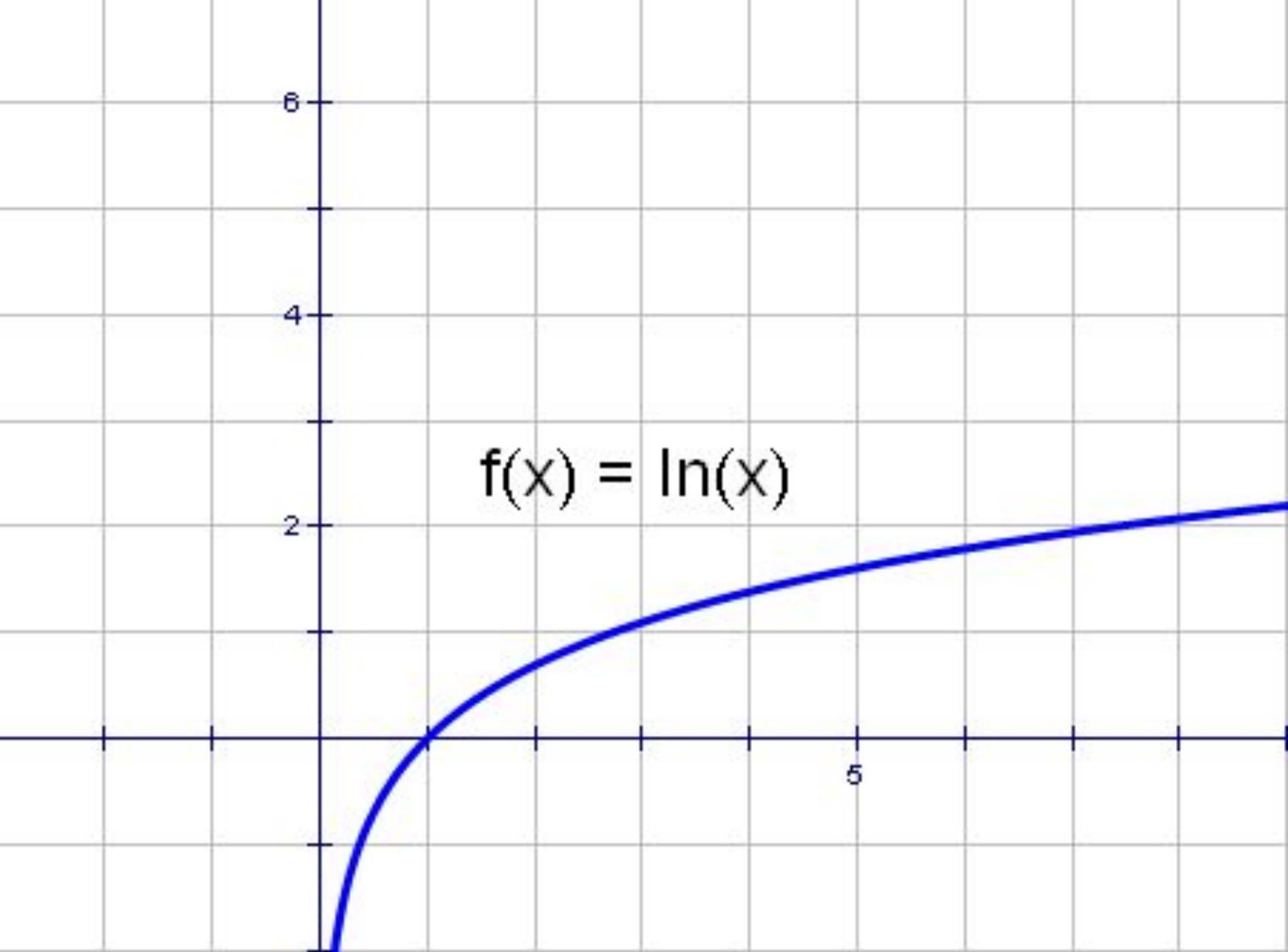
$\ln x$

[ОТВЕТЫ](#)

$$y = \ln x$$

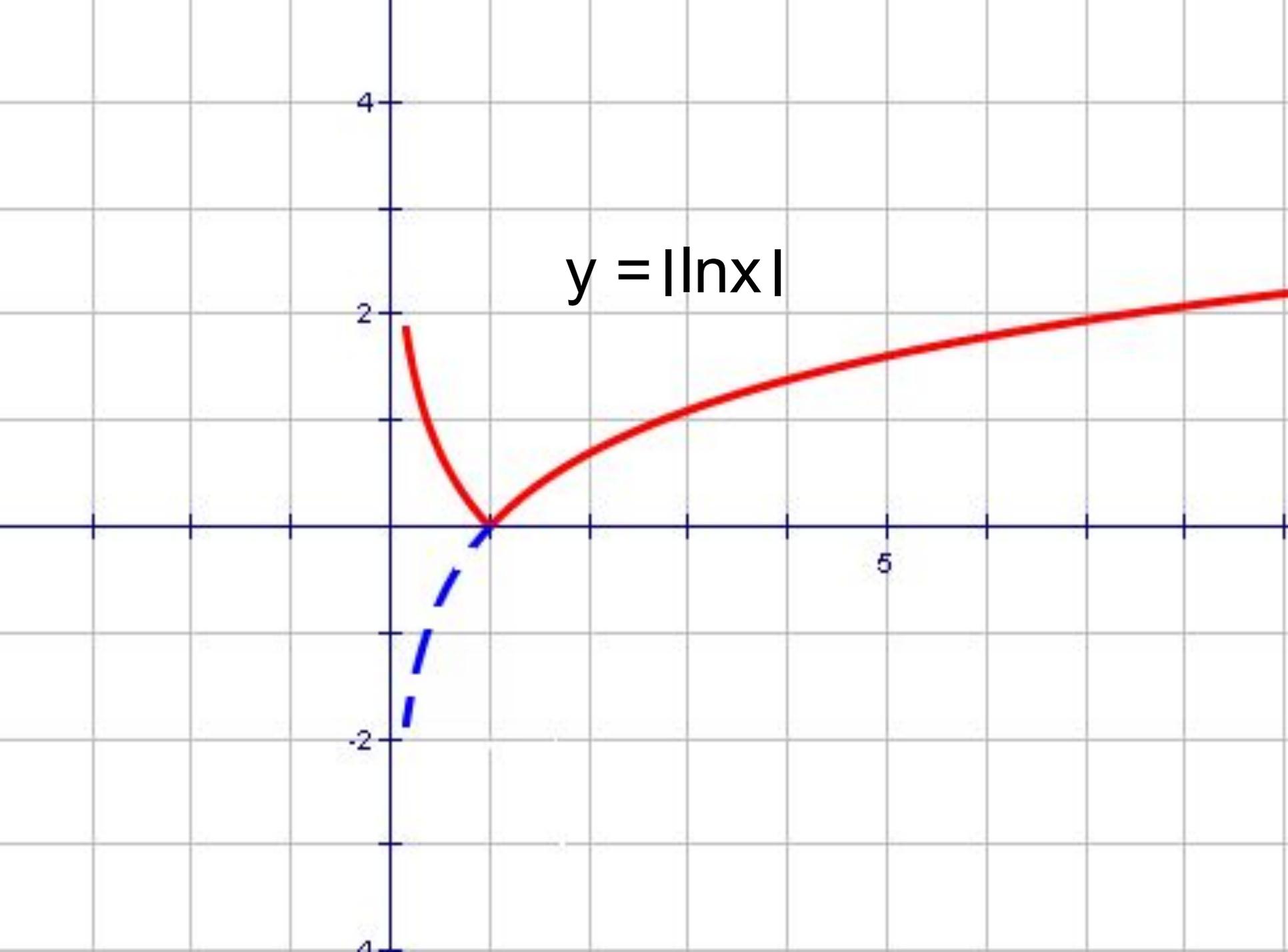
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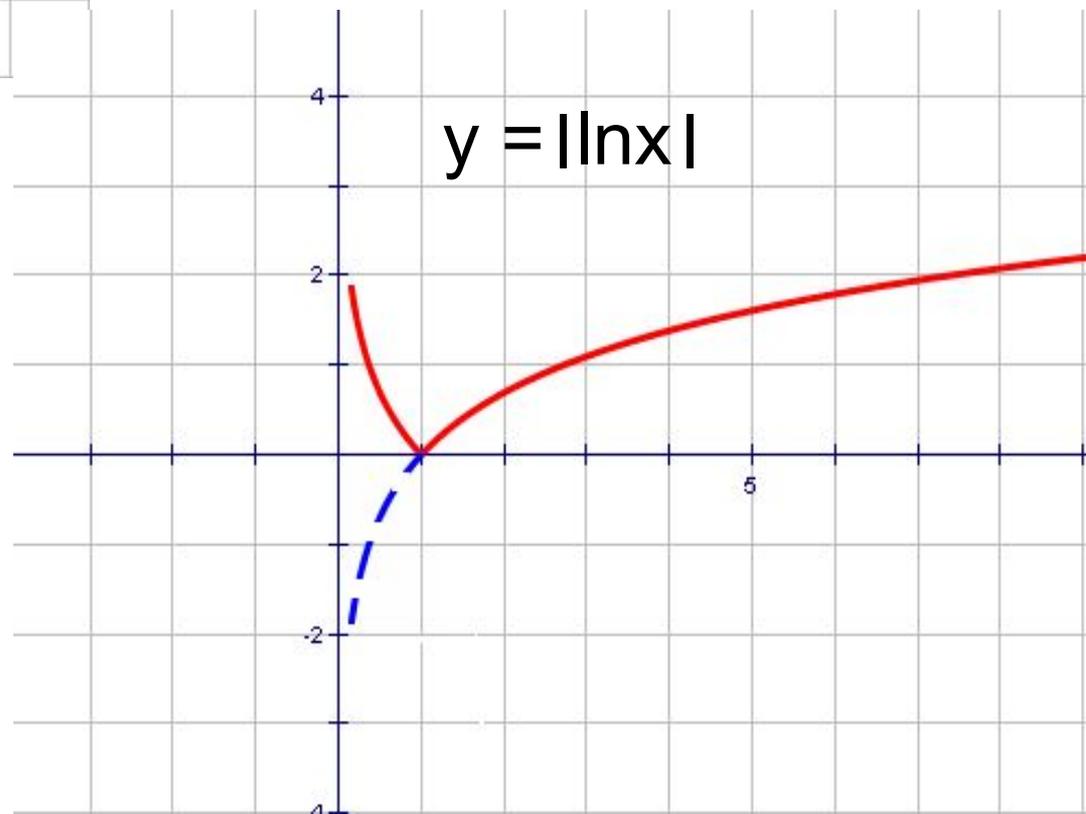
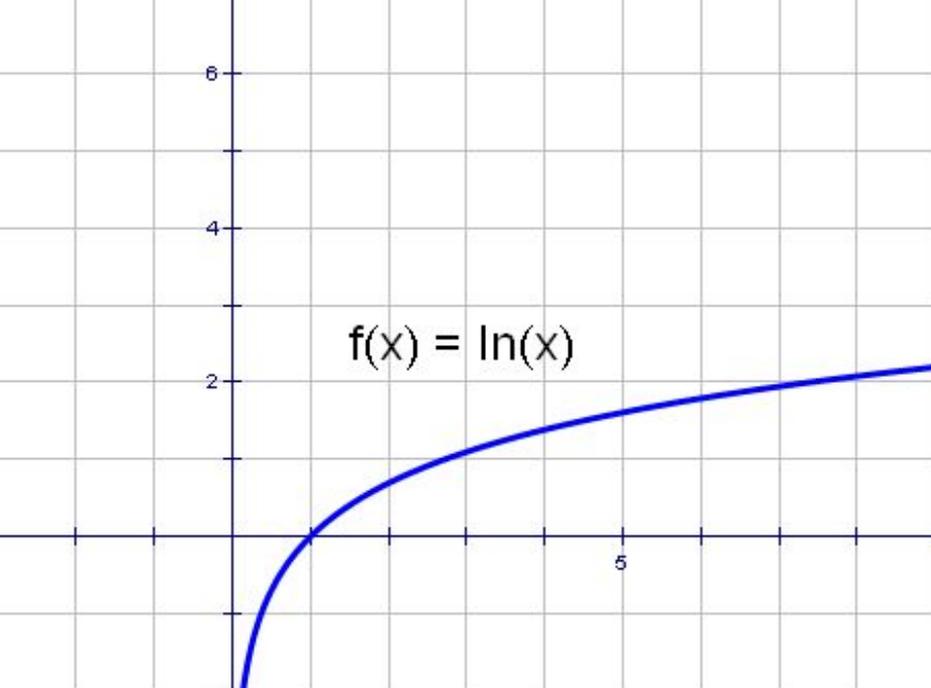
$$y = |\ln x|$$



$$f(x) = \ln(x)$$

$$y = |\ln x|$$

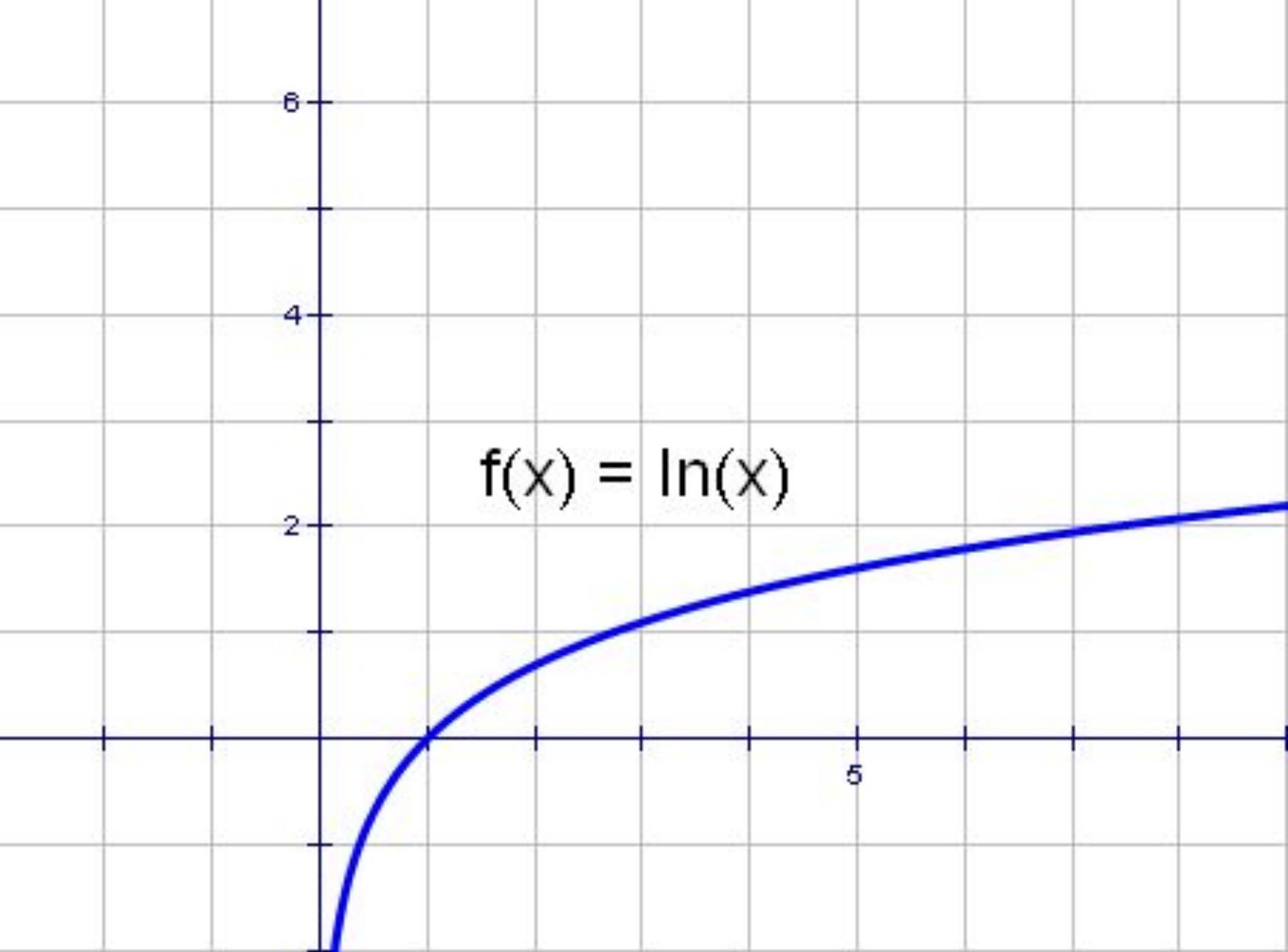




$$y = \ln x$$

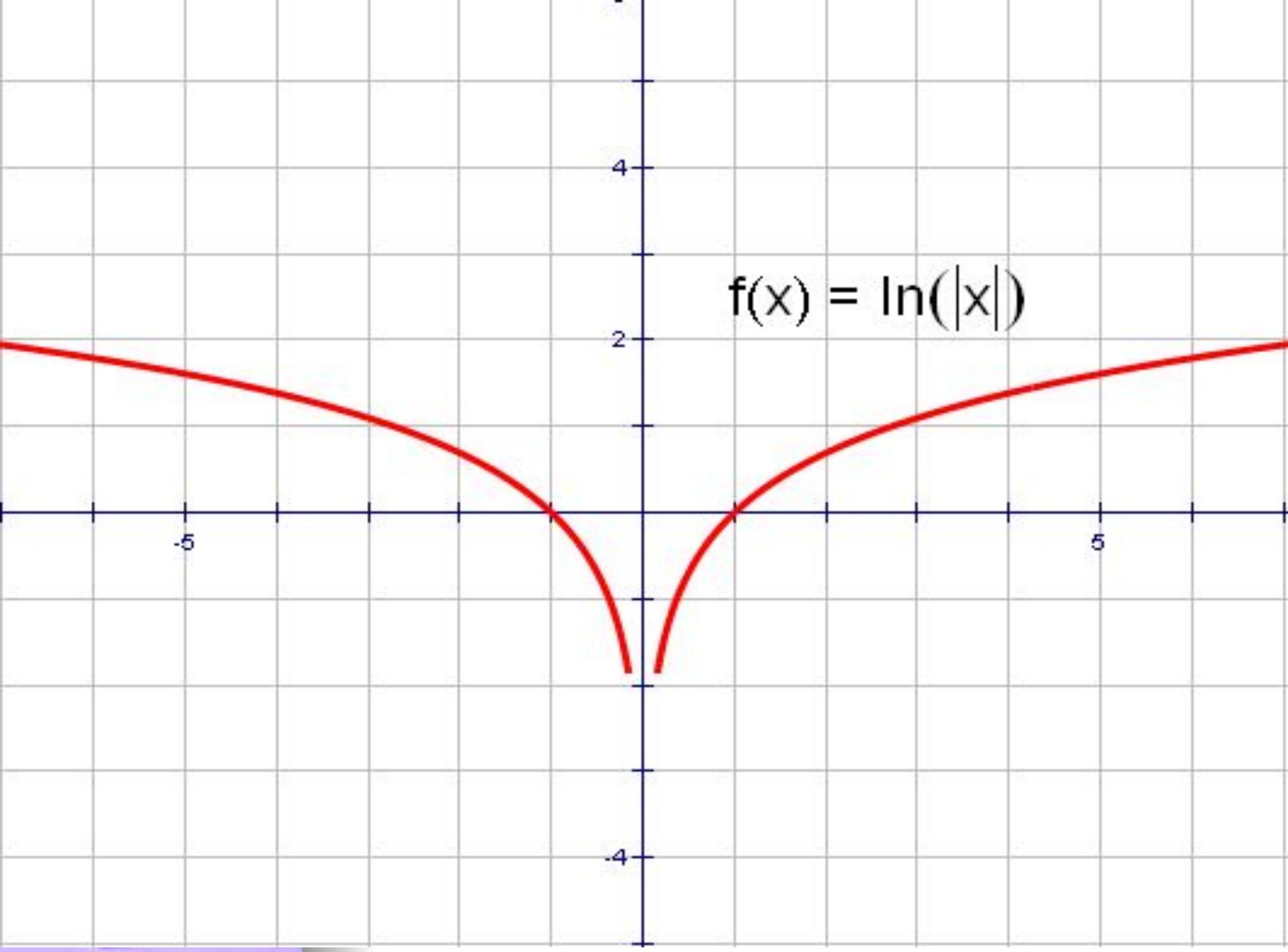
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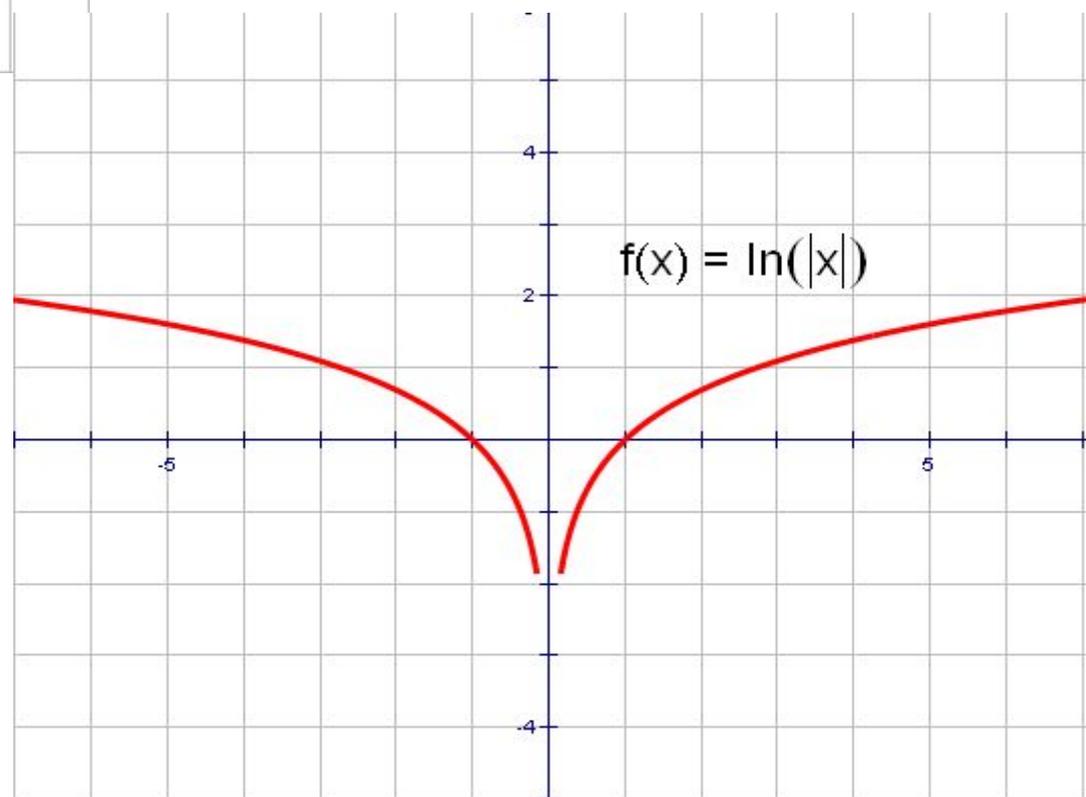
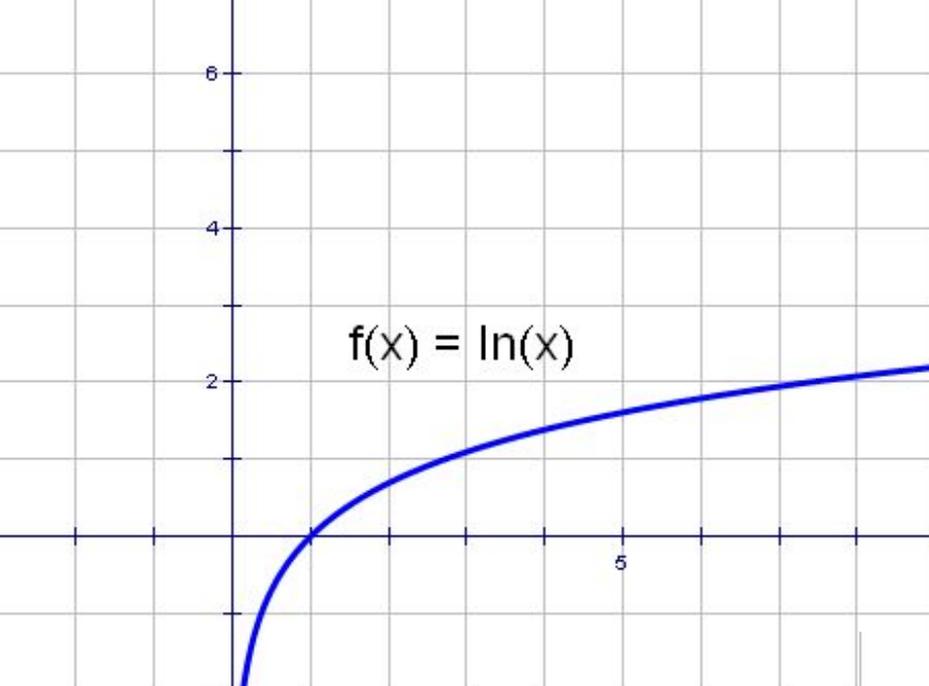
$$y = \ln |x|$$



$$f(x) = \ln(x)$$

$$f(x) = \ln(|x|)$$

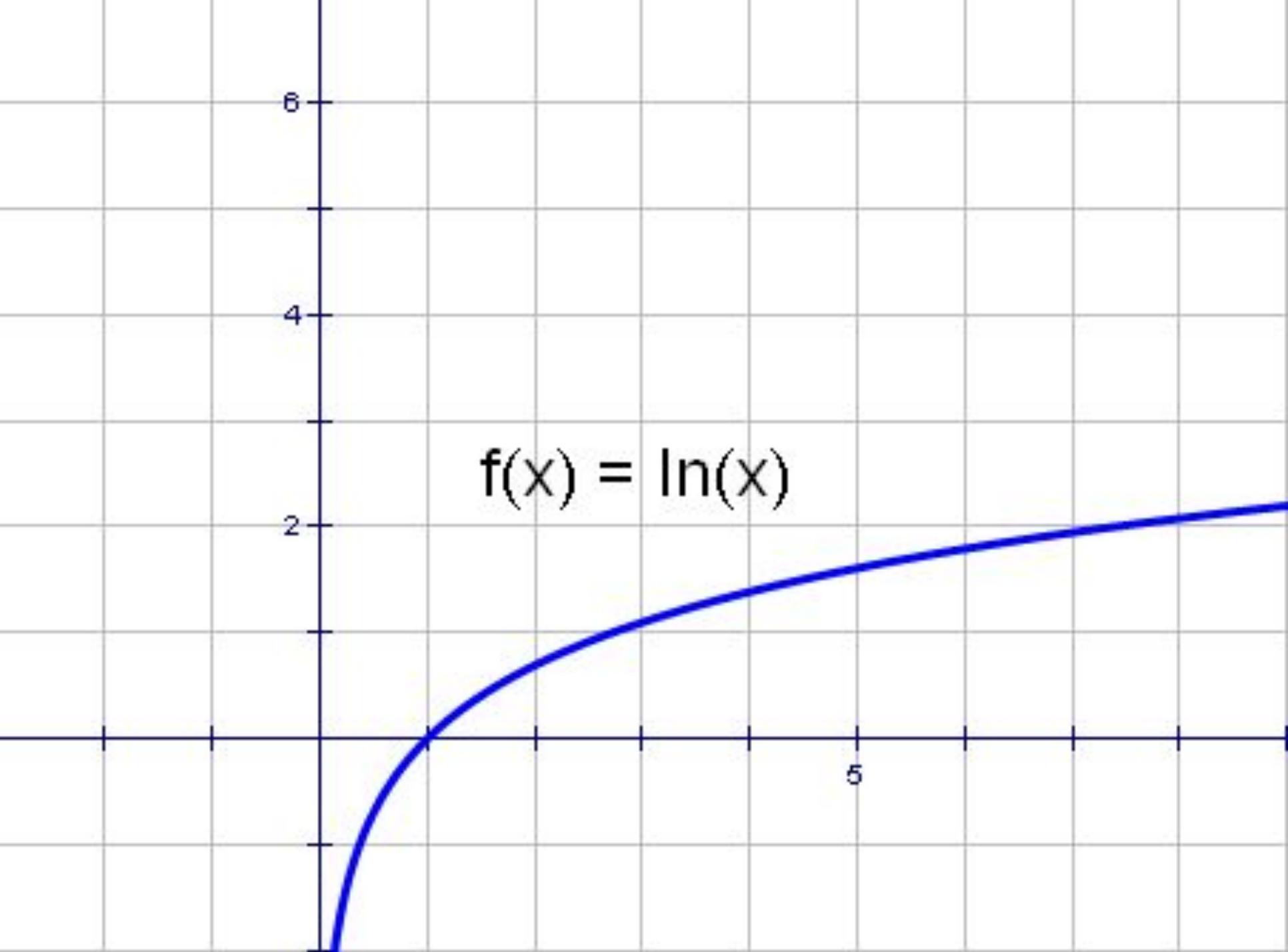




$$y = \ln x$$

и

$$|y| = \ln x$$



$$f(x) = \ln(x)$$

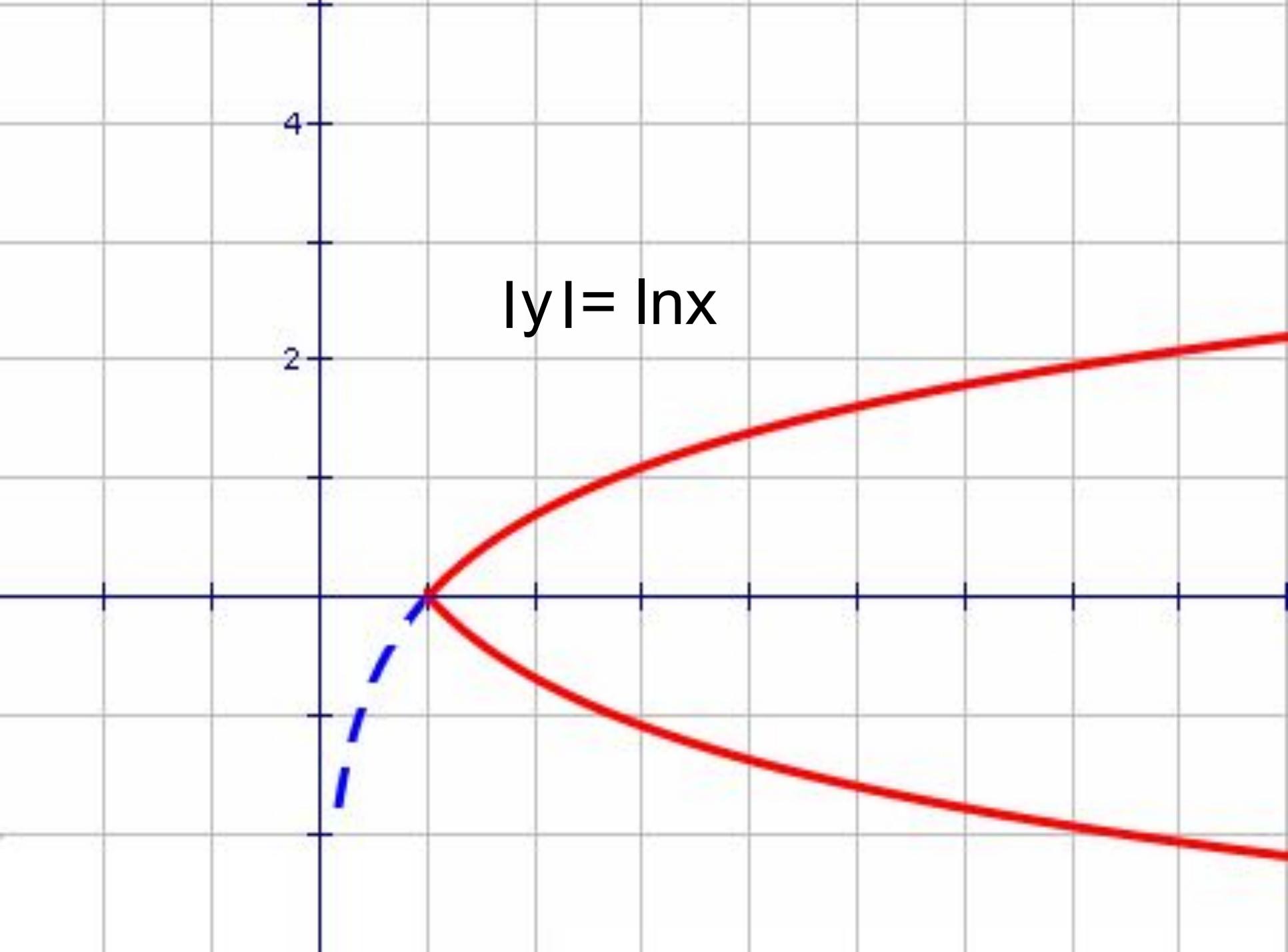
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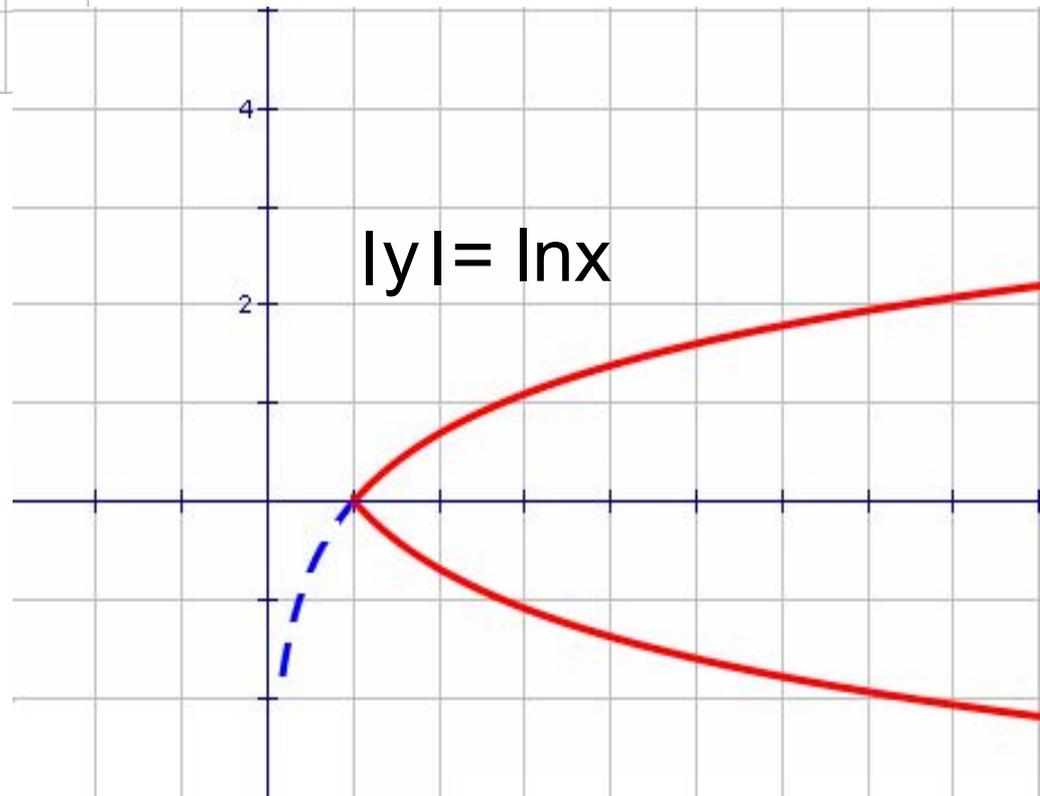
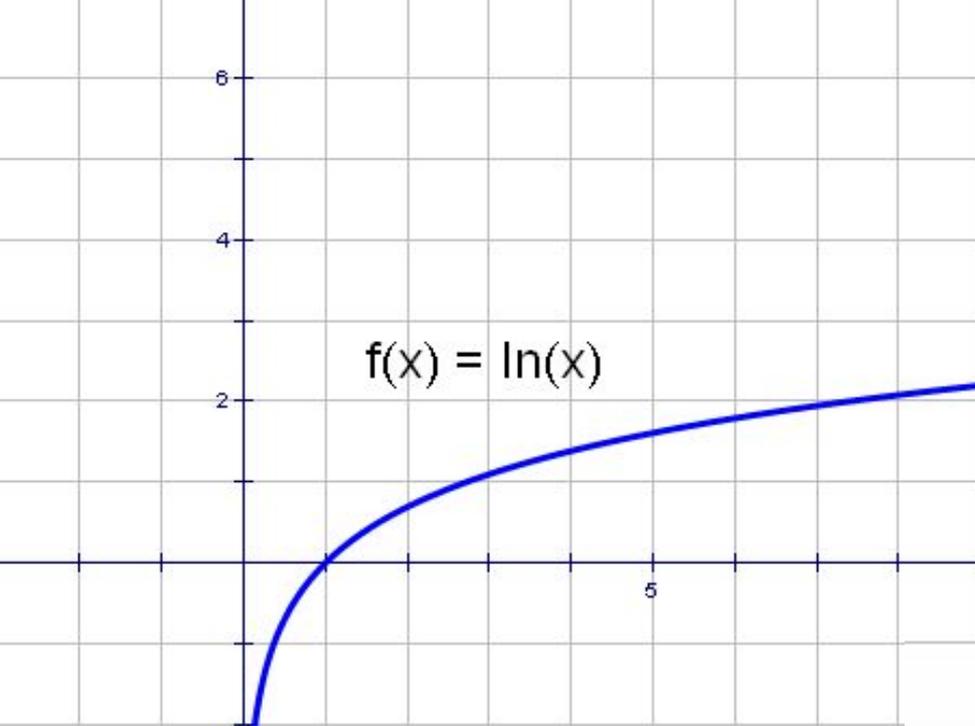
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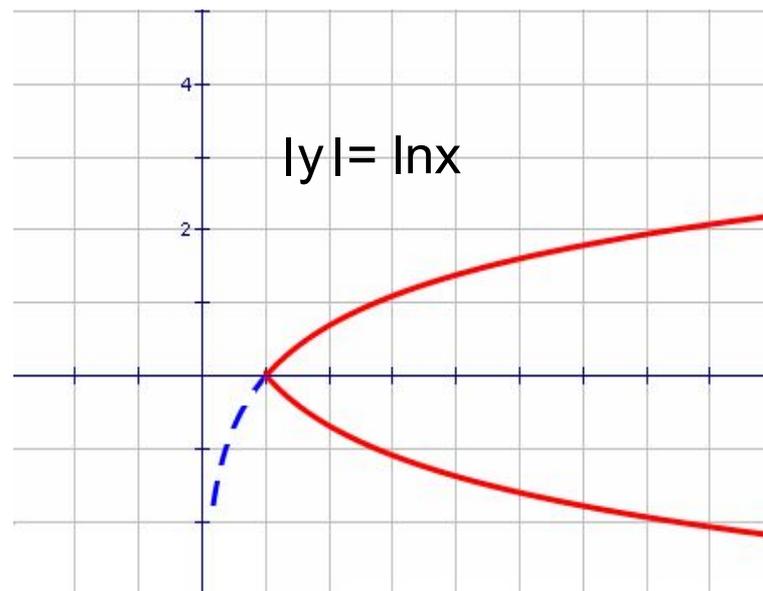
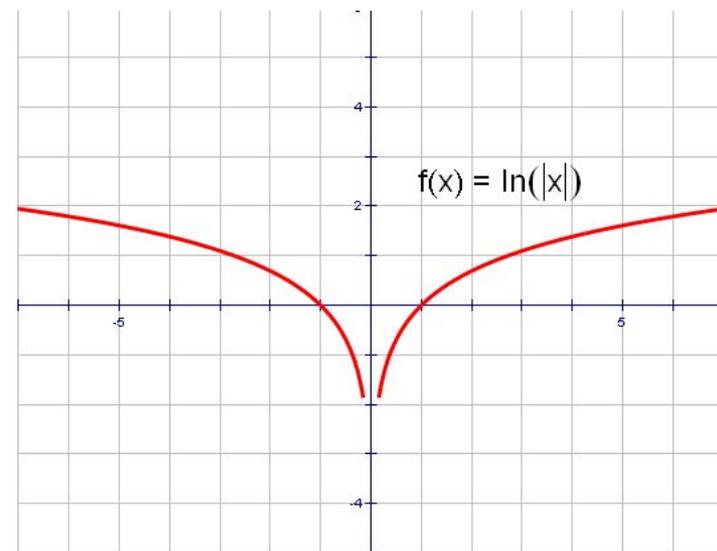
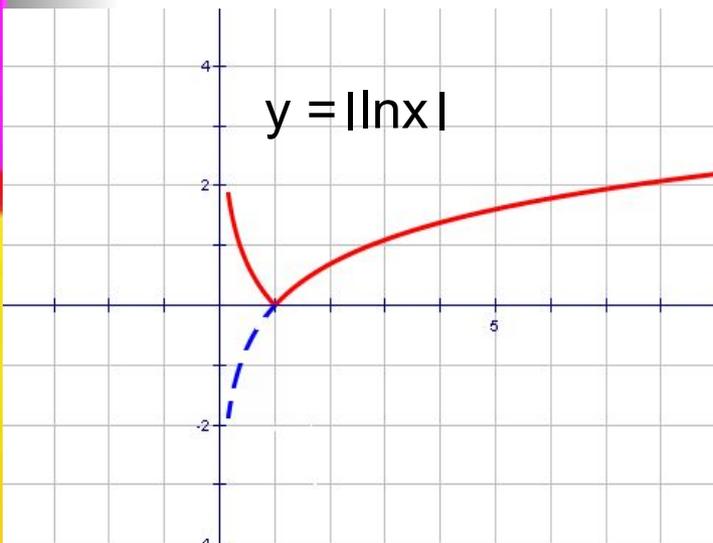
$$|y| = \ln x$$







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?

