

10/12/ Precalc

Quiz 12

$$\textcircled{1} f(x) = \begin{cases} 4+2x & x < 0 \\ (x-2)^2 & x \geq 0 \end{cases}$$

x	-5	-3	0	3	5
f(x)	-6	-2	4	1	9

$$(-2)^2 = 4$$

$$\textcircled{2} g(x) = \frac{1}{\sqrt{5-2x}}$$

$$\text{Need: } \left. \begin{array}{l} 5-2x \geq 0 \\ 5-2x \neq 0 \end{array} \right\} \Rightarrow$$

$$5-2x > 0 \Rightarrow$$

$$5 > 2x \Rightarrow$$

$$\frac{5}{2} > x$$

$$(-\infty, \frac{5}{2})$$

Last time

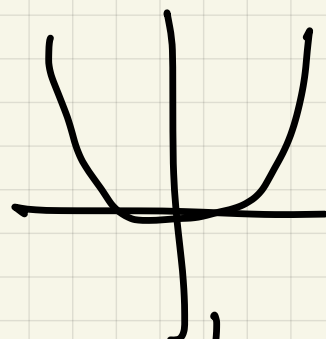
2.4

A

$$y = mx + b$$

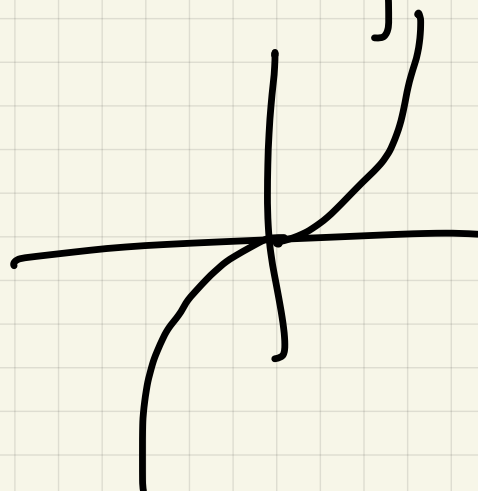
B

$$y = x^2$$



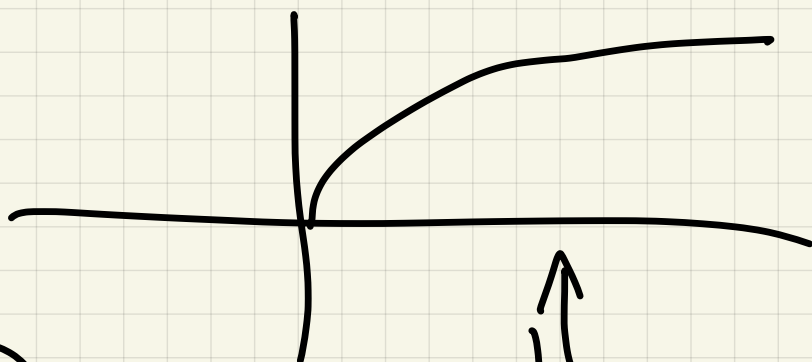
C

$$y = x^3$$



D

$$y = \sqrt{x}$$



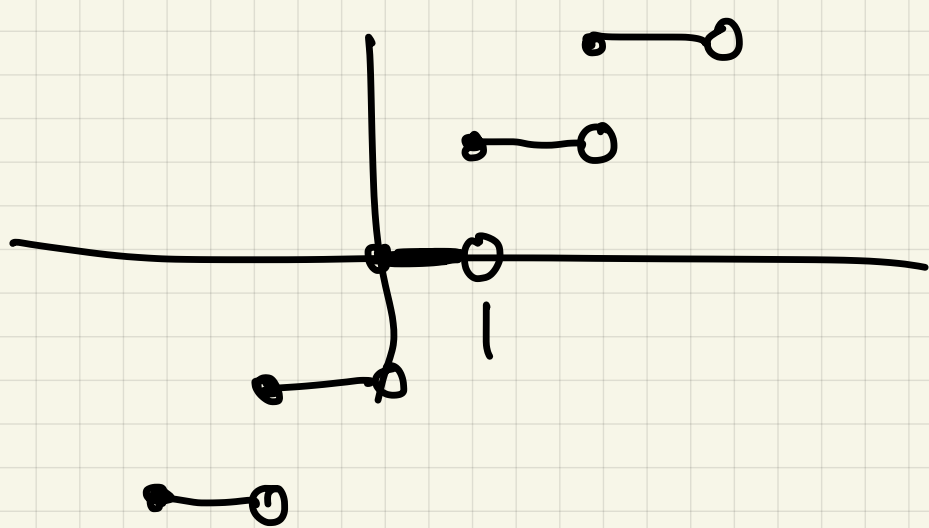
E

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



F

$$y = f(x) = [[x]] = \lfloor x \rfloor$$



2.5

Transformations

$$c \geq 0$$

$$y = f(x)$$

$$y = f(x) + c \quad \uparrow$$

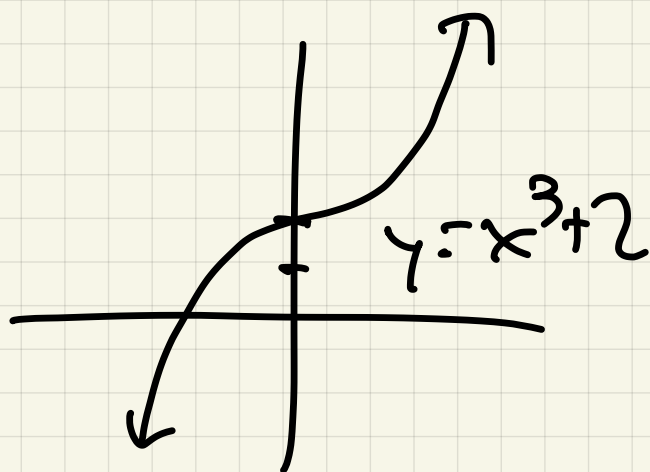
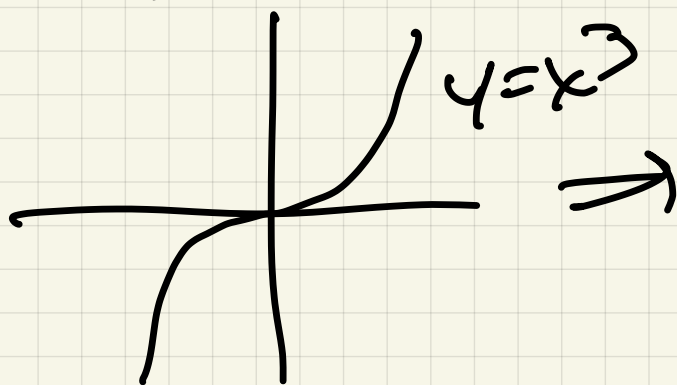
$$y = f(x) - c \quad \downarrow$$

$$y = f(x - c) \quad \rightarrow$$

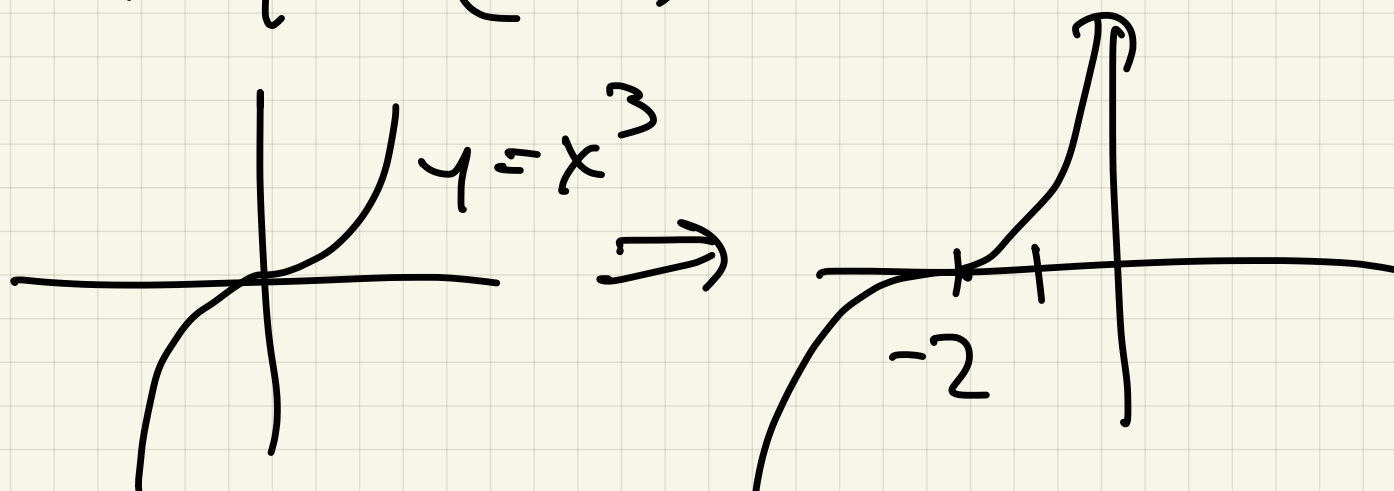
$$y = f(x + c) \quad \leftarrow$$

Ex1 Sketchen

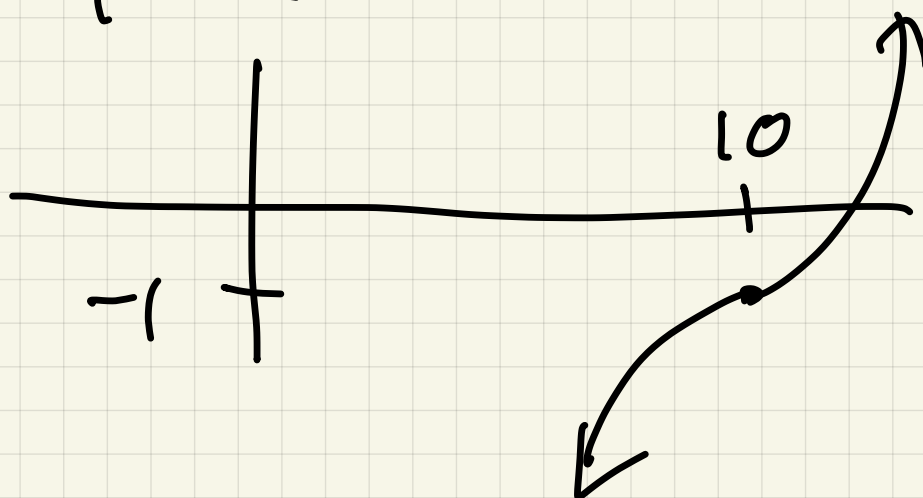
(a) $y = x^3 + 2$



$$(b) \quad y = (x+2)^3$$



$$(c) \quad y = (x-10)^3 - 1$$



Reflections

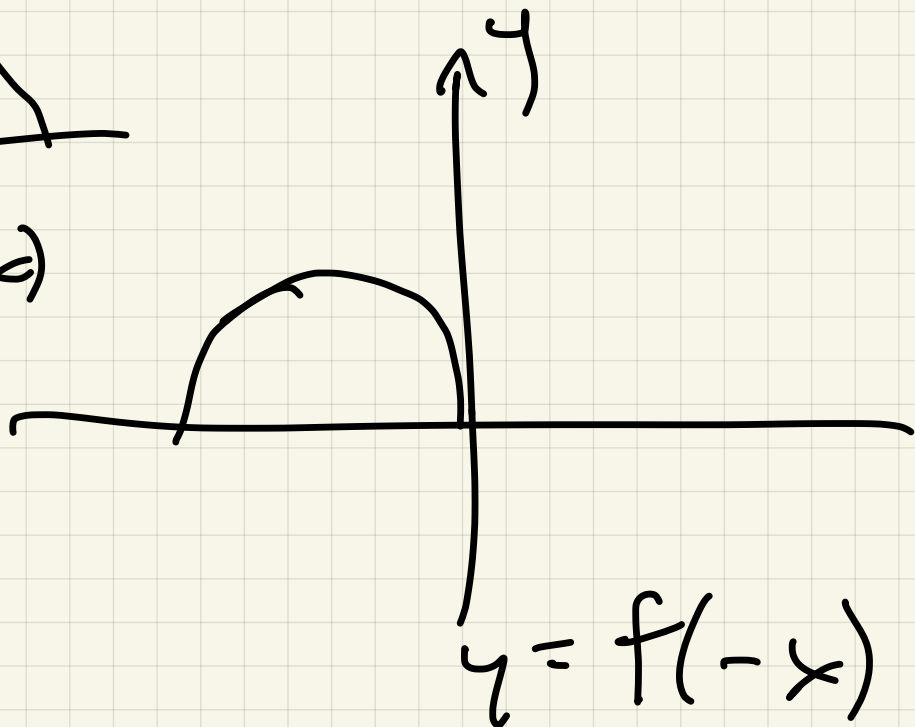
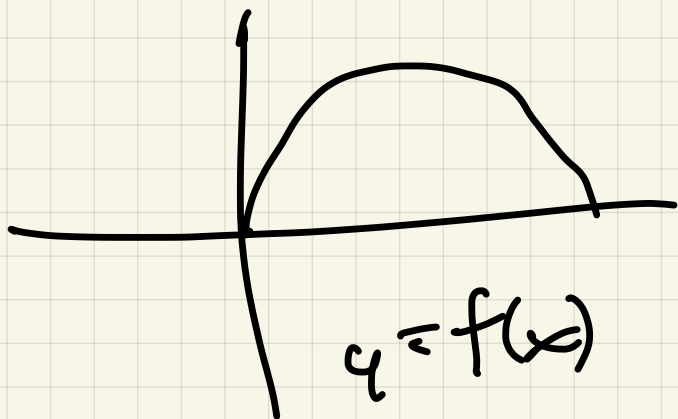
$$y = f(x)$$

$$y = -f(x)$$

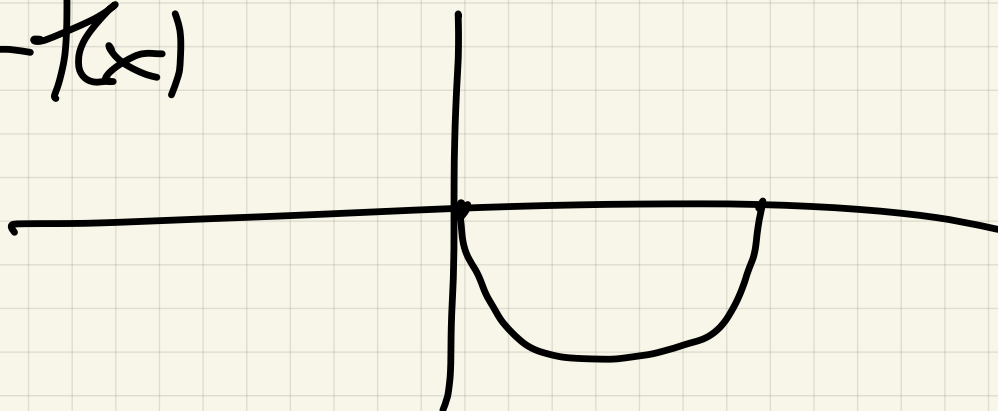
x-axis

$$y = f(-x)$$

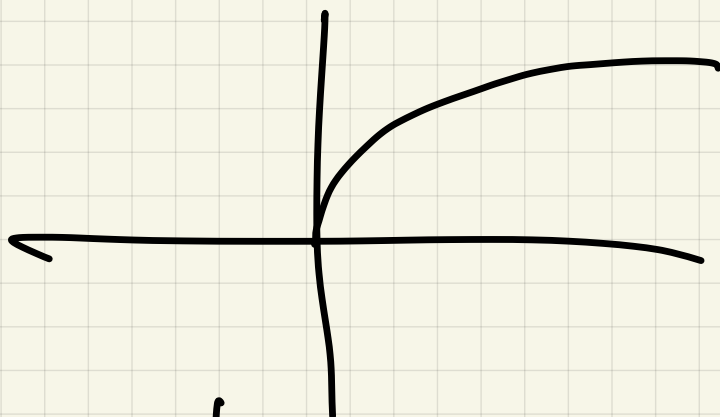
y-axis



$$y = -f(x)$$



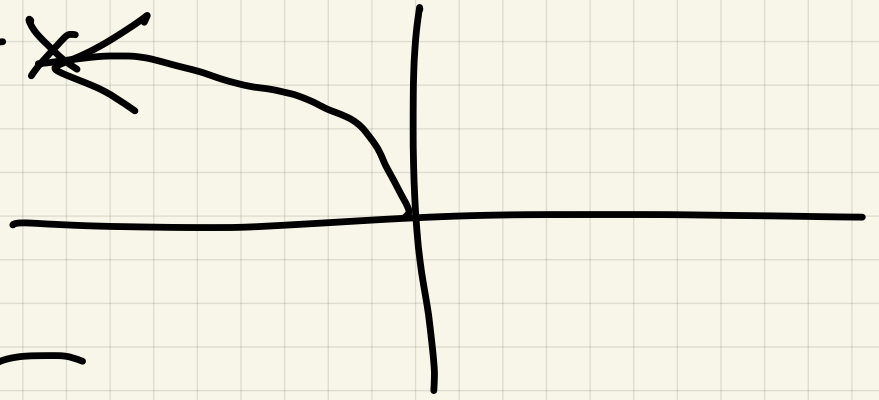
Ex 2 $y = \sqrt{x}$



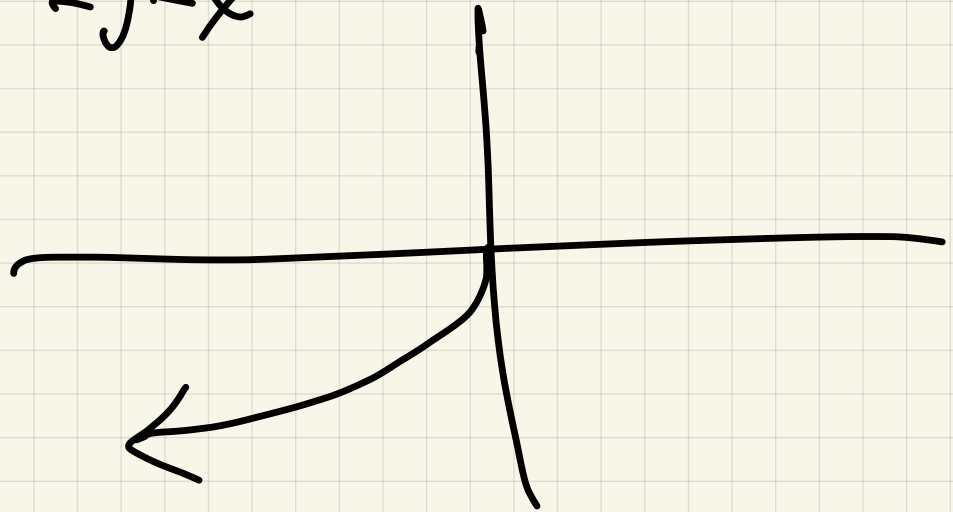
(a) $y = -\sqrt{x}$



(b) $y = \sqrt{-x}$

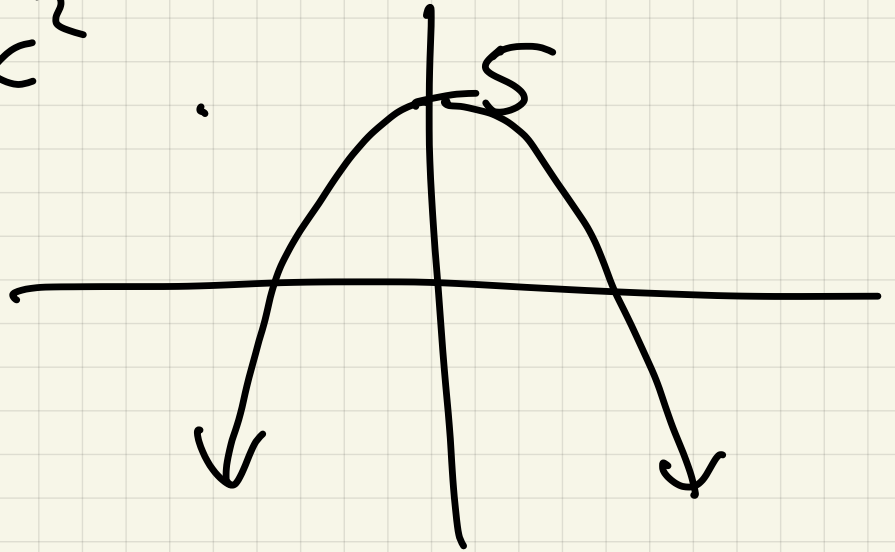


(c) $y = -\sqrt{-x}$



Ex 3 Sketch:

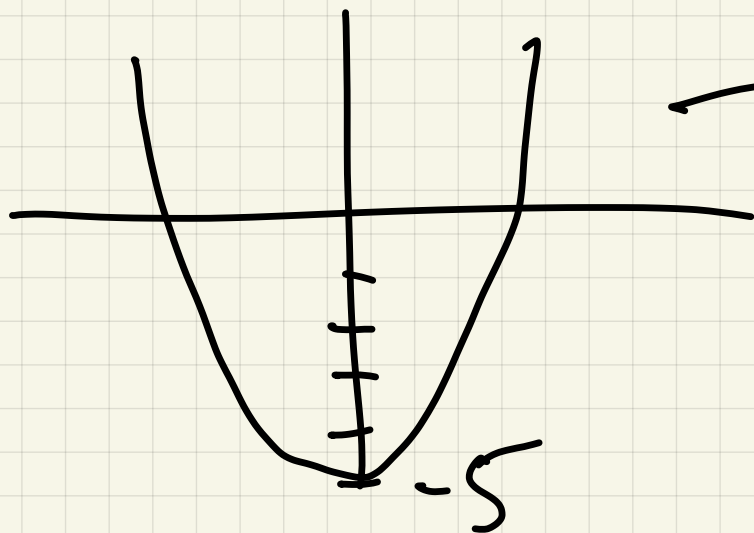
(a) $y = 5 - x^2$



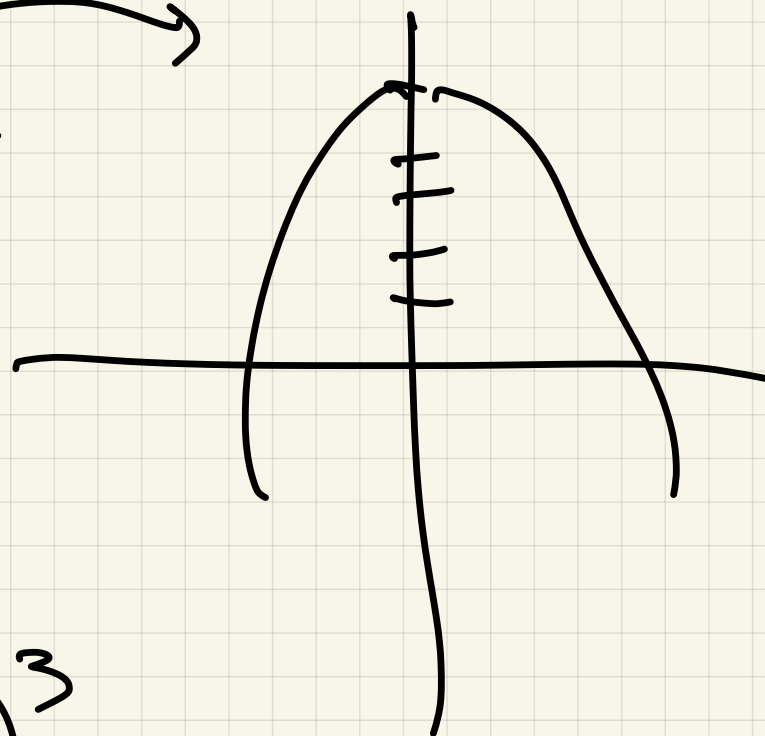
$= -(-5 + x^2)$

Same

$$y = -5 + x^2$$

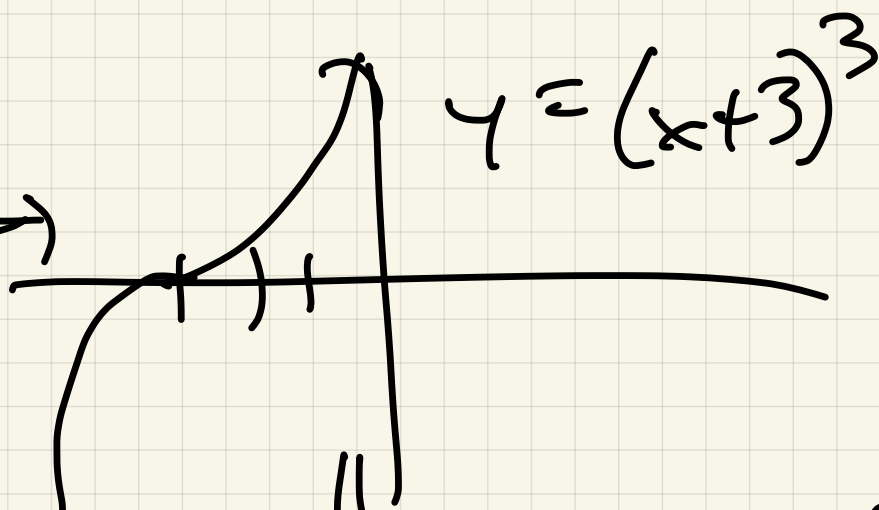
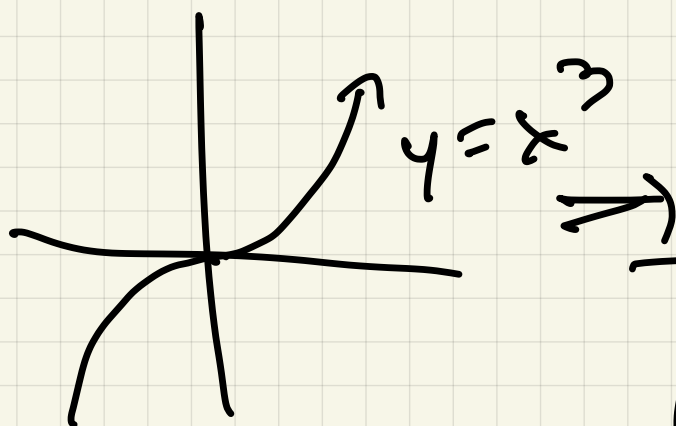


$$y = -(-5 + x^2)$$

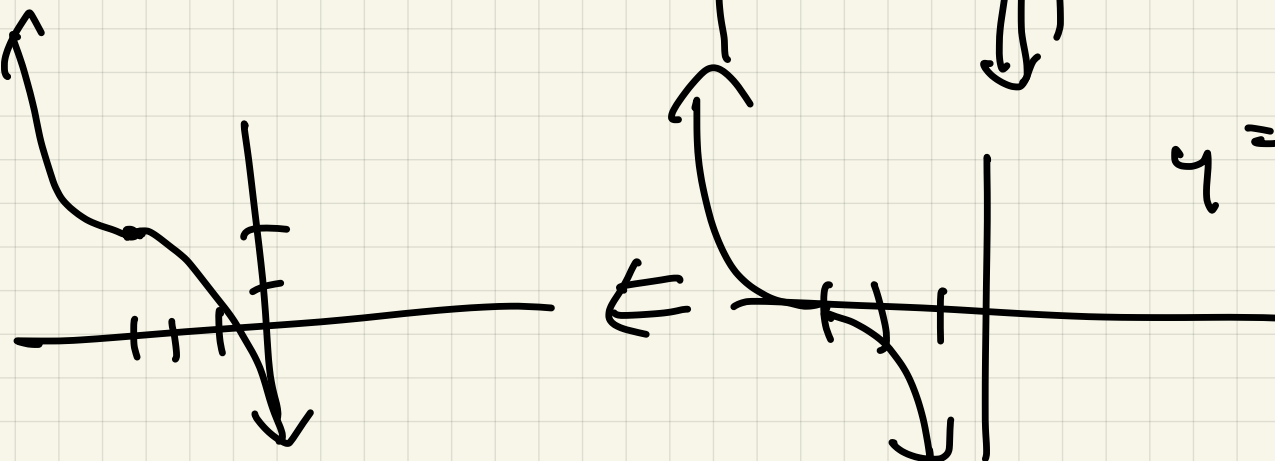


(e)

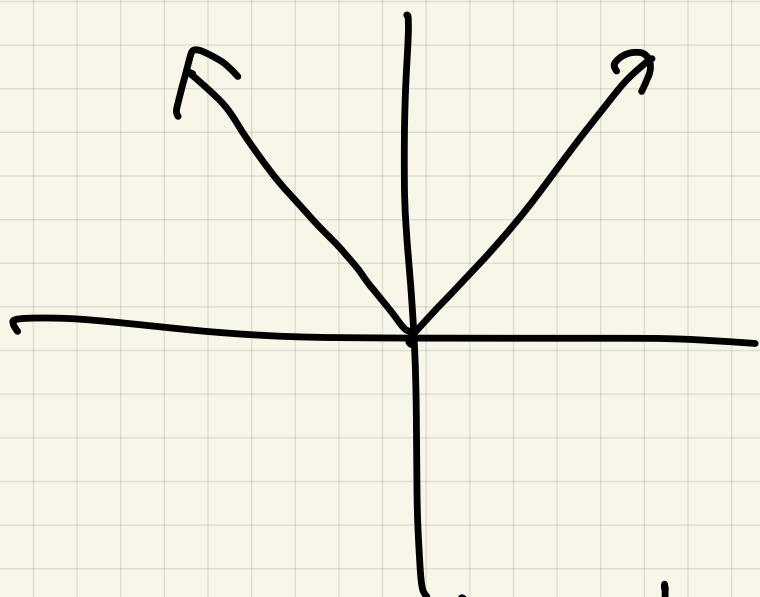
$$y = 2 - (x+3)^3$$



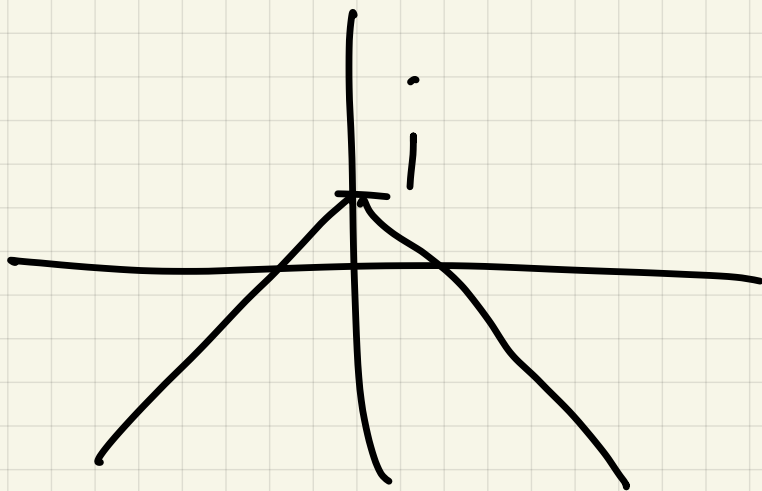
$$y = -(x+3)^3$$



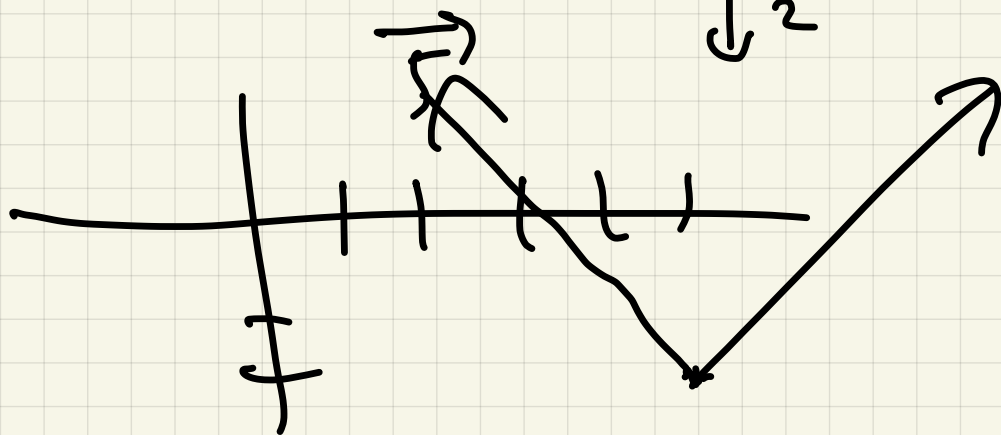
Ex 4 (a) $y = |x| = \begin{cases} x & x \geq 0 \\ -x & x < 0 \end{cases}$



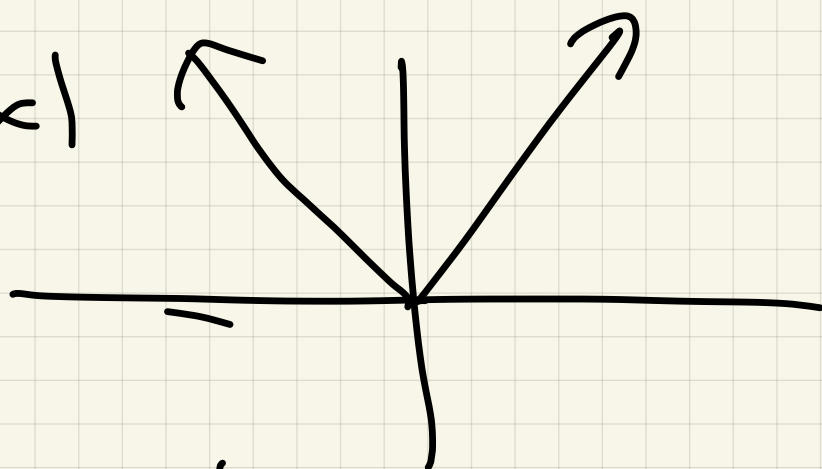
(b) $y = 1 - |x|$



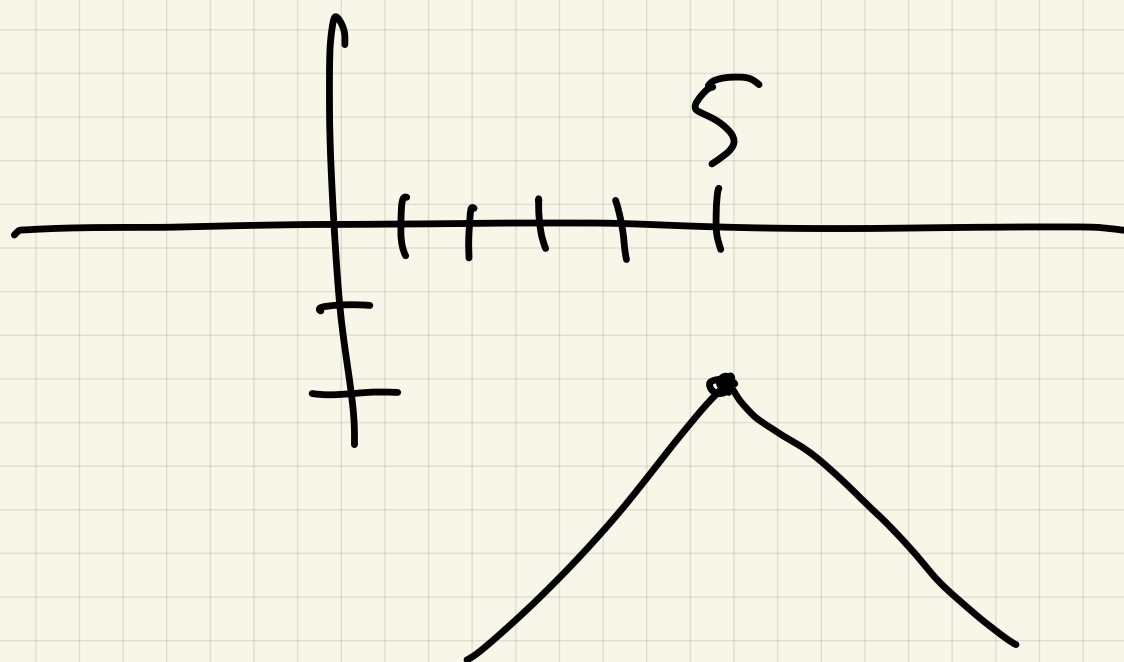
(c) $y = |x - 5| - 2$



(d) $y = |x|$



(e) $y = -|x-5| - 2$



Distortions:

Stretches / shrinks

Ex 1

Sketch graphs

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

(a) $y = 2f(x)$

(c) $y = f(2x)$

