

## 2.6 - Library of Functions

Graph the functions:

①  $f(x) = mx + b$

②  $f(x) = \sqrt{x}$

x	y
0	
1	
4	
9	
25	

③  $f(x) = \sqrt[3]{x}$

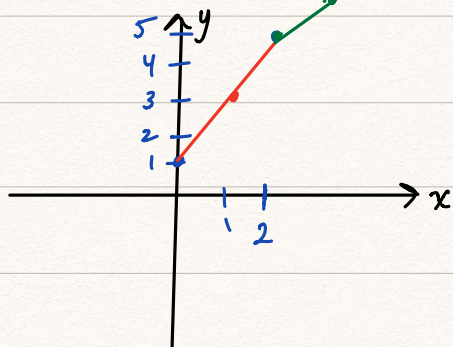
x	y
-27	
-8	
-1	
0	
1	
8	
27	

## Piecewise Functions

• Rules for the function are different depending on input.

Ex:

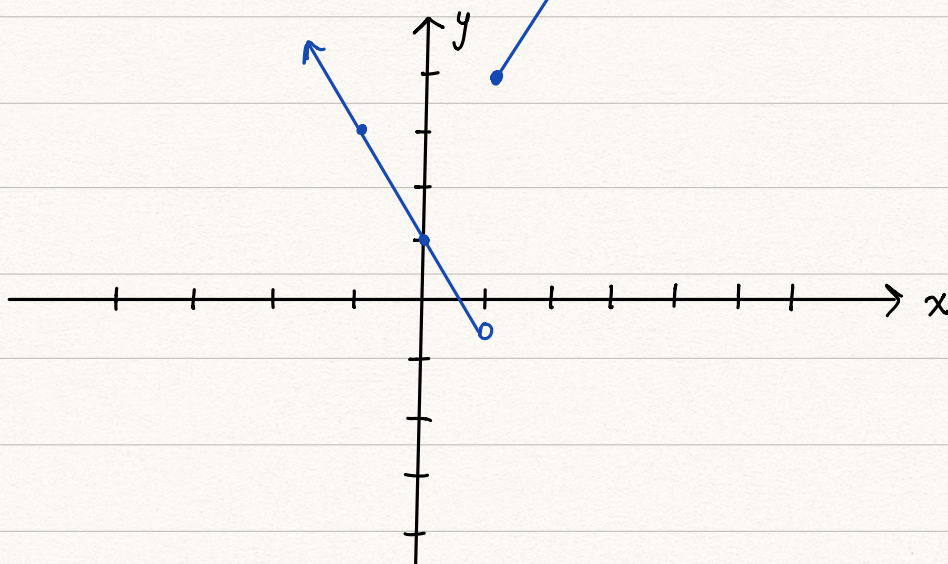
①  $f(x) = \begin{cases} 2x+1 & \text{if } 0 \leq x < 2 \\ x+3 & \text{if } x \geq 2 \end{cases} \quad (f(x) = 2x+1)$



x	y
0	1
1	$2(1)+1 = 3$
2	$2+3 = 5$
3	6
4	7

②

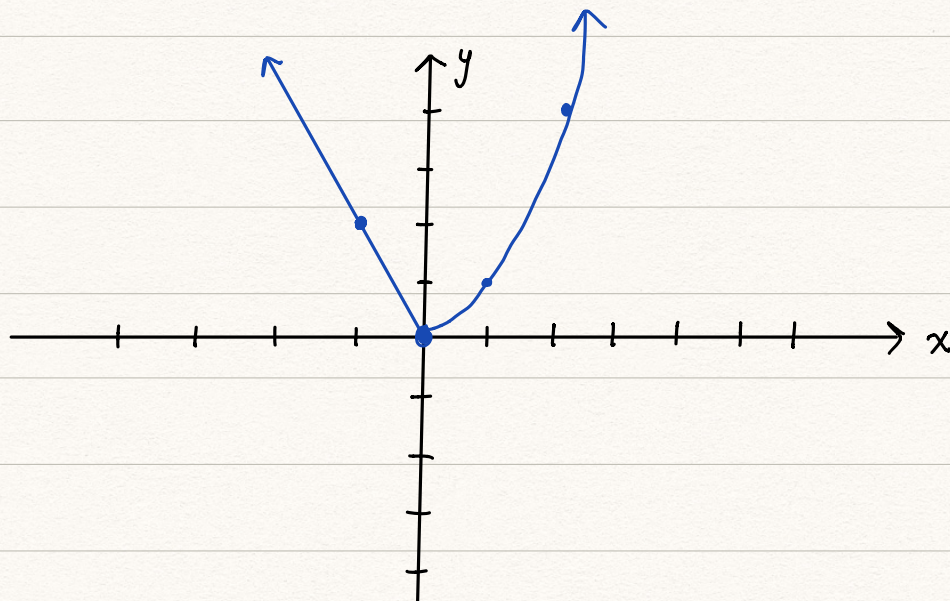
$$h(x) = \begin{cases} -2x+1 & \text{if } x < 1 \\ 3x+1 & \text{if } x \geq 1 \end{cases}$$



x	y
-1	3 = -2(-1)+1
0	1
1	4
2	7
3	10

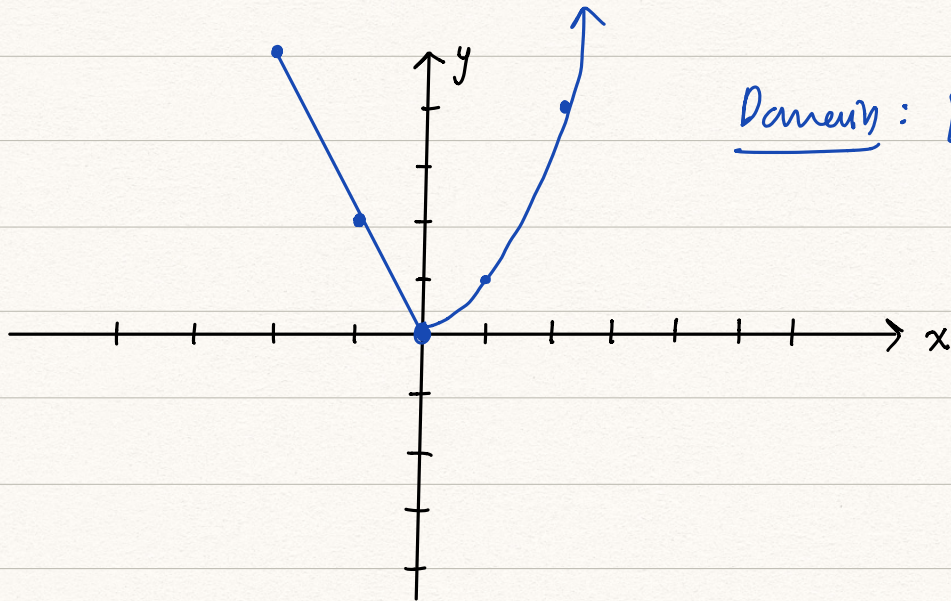
③

$$F(x) = \begin{cases} -2x & \text{if } x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$$



④

$$F(x) = \begin{cases} -2x & \text{if } -2 \leq x < 0 \\ x^2 & \text{if } x \geq 0 \end{cases}$$



Domain:  $[-2, \infty)$