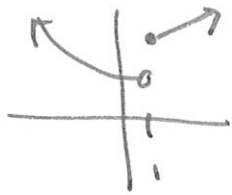


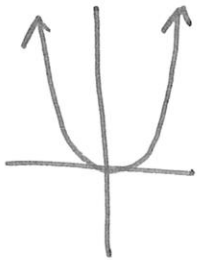
2.6 Continuous

can trace without lifting pencil



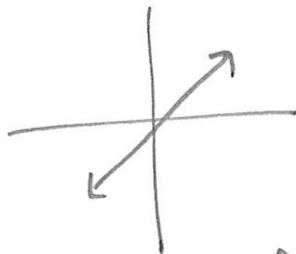
Continuous $(-\infty, 1)$ and $(1, \infty)$

Ex 1



Continuous over entire domain $(-\infty, \infty)$

Identity function $f(x) = x$
 $y = x$



D: $(-\infty, \infty)$

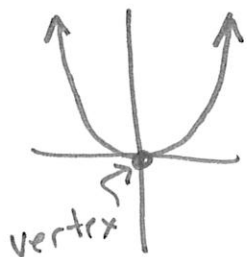
R: $(-\infty, \infty)$

$f(x) = x$ is increasing $(-\infty, \infty)$

Continuous $(-\infty, \infty)$

Quadratic (Squaring) Function

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



D: $(-\infty, \infty)$

R: $[0, \infty)$

$f(x)$ decreases $(-\infty, 0)$

increases $(0, \infty)$

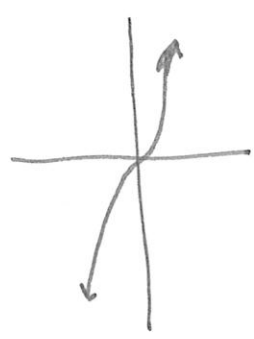
Continuous $(-\infty, \infty)$

x	y
-2	4
-1	1
0	0
1	1
2	4

Cubing function

$f(x) = x^3$

x	y
-2	-8
-1	-1
0	0
1	1
2	8

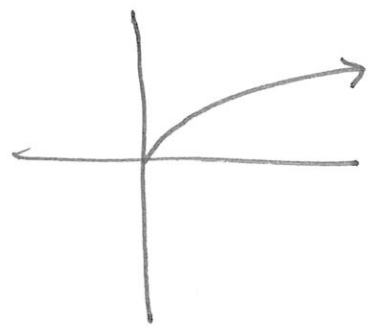


D: $(-\infty, \infty)$
 R: $(-\infty, \infty)$
 increases $(-\infty, \infty)$
 continuous $(-\infty, \infty)$

Square Root

$f(x) = \sqrt{x} = x^{\frac{1}{2}}$

x	y
0	0
1	1
4	2
9	3
16	4

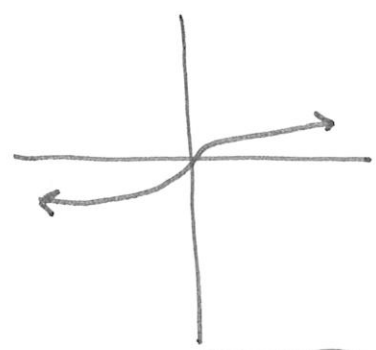


D: $[0, \infty)$
 R: $[0, \infty)$
 increase $(0, \infty)$
 continuous $[0, \infty)$

Cube Root Function

$f(x) = \sqrt[3]{x} = x^{\frac{1}{3}}$

x	y
-8	-2
-1	-1
0	0
1	1
8	2

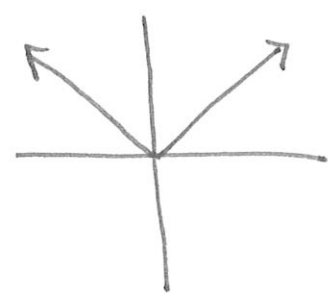


D: $(-\infty, \infty)$
 R: $(-\infty, \infty)$
 increases $(-\infty, \infty)$
 continuous $(-\infty, \infty)$

Absolute Value

$f(x) = |x|$

x	y
-2	2
-1	1
0	0
1	1
2	2



D: $(-\infty, \infty)$
 R: $[0, \infty)$
 Decreases $(-\infty, 0)$
 Increases $(0, \infty)$
 Continuous $(-\infty, \infty)$

$f(x) = |x|$

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$