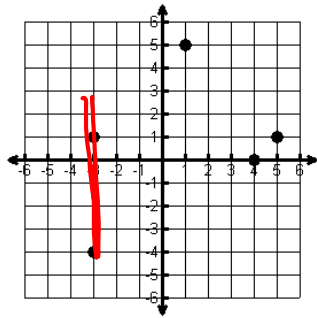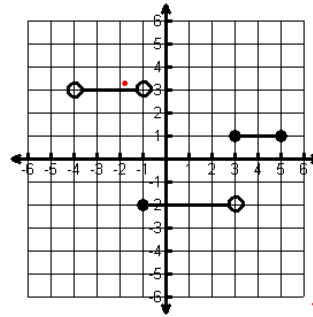DO NOW

Identify the domain and range. Is it a function?
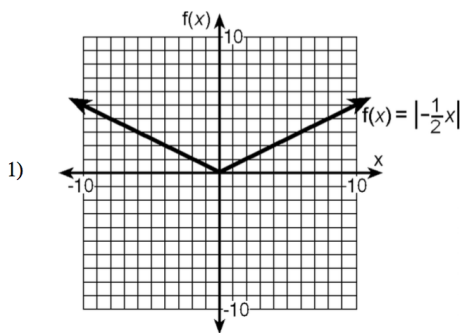

$D = \{-3, 1, 4, 5\}$

$R = \{-4, 0, 1, 5\}$

Not a function

function

$(-4, 5]$

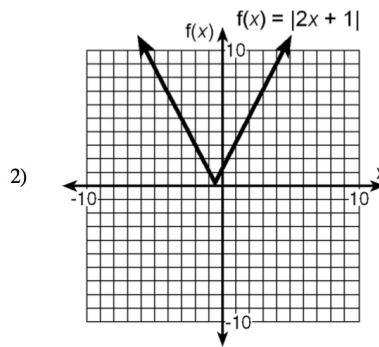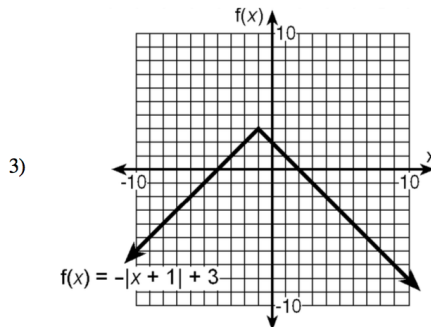$-4 < x \le 5$

$R = \{-2, 1, 3\}$

Feb 10-1:02 PM

1)

$f(x) = \left|-\frac{1}{2}x\right|$

Domain: $(-\infty, \infty)$
Range: $[0, \infty)$

2)

$f(x) = |2x + 1|$

Domain: $(-\infty, \infty)$
Range: $[0, \infty)$

3)

$f(x) = -|x + 1| + 3$

Domain: $(-\infty, \infty)$
Range: $(-\infty, 3]$

Feb 1-8:02 PM

1

Square Roots and Cube Roots

What is the difference between a square root and a cube root?

To find $\sqrt{x}$ we find a number, when multiplied by itself equals x $\boxed{2nd}$ $\boxed{x^2}$

To find $\sqrt[3]{x}$ we find a number, when multiplied by itself *3 times* equals x

$$\sqrt[3]{-27} = -3$$

$$-3(-3)(-3)$$

$\boxed{MATH}$

Option 4

Apr 23-7:27 AM

Evaluate:

1) $\sqrt[3]{x}$ when x = 64

$$\sqrt[3]{64} = 4$$

3) $\sqrt{x}$ when x = 49

$$\sqrt{49} = 7$$

2) $\sqrt{x}$ when x = 121

$$\sqrt{121} = 11$$
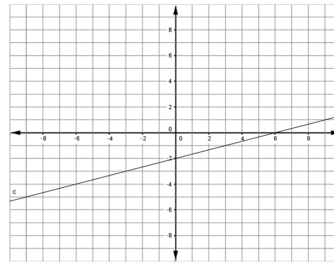
4) $\sqrt[3]{x}$ when x = -8

$$\sqrt[3]{-8} = -2$$

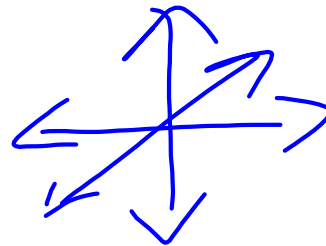Apr 23-7:21 AM

Non-Linear Functions

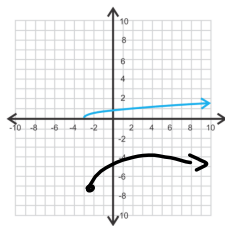**Linear Functions -** have a slope that is a constant

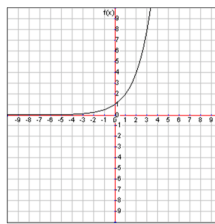$$y = mx + b$$

Ex:

exponents of 1
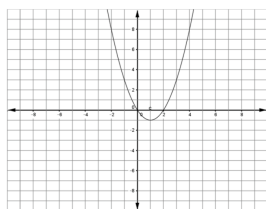
Jan 4-2:34 PM

Non-Linear Functions

Nonlinear Functions have a slope that varies between points.
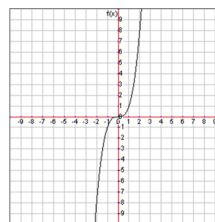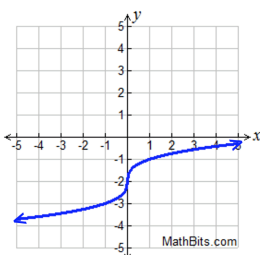
Square root
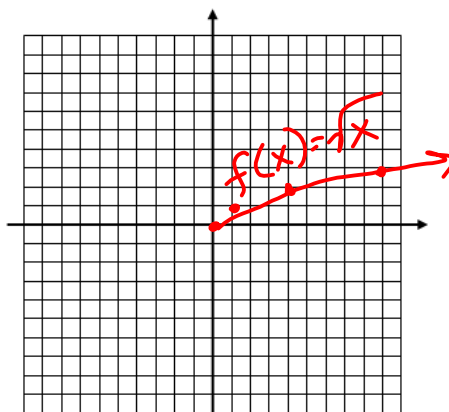
Exponential

Quadratic

Cubic x^3

Cube Root

MathBits.com

Jan 4-2:34 PM

3

Square Root Functions

$$f(x) = \sqrt{x}$$

x	f(x)
0	0
1	1
2	1.414...
3	1.732..
4	2
9	3

$f(x)=\sqrt{x}$

What happens in the table when x < 0? ERROR

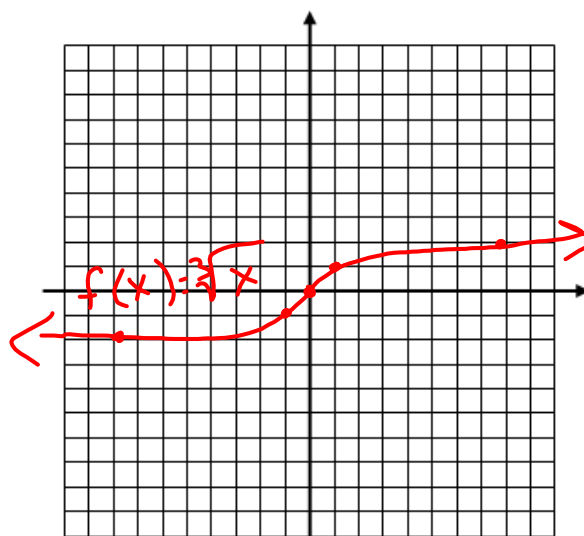Why does this happen? Cannot have a negative under the radical

Domain: $[0, \infty)$

Range: $[0, \infty)$

Apr 23-7:20 AM

Cube Root Functions

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

x	f(x)
-8	-2
-1	-1
0	0
1	1
8	2

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

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

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

Apr 23-7:36 AM
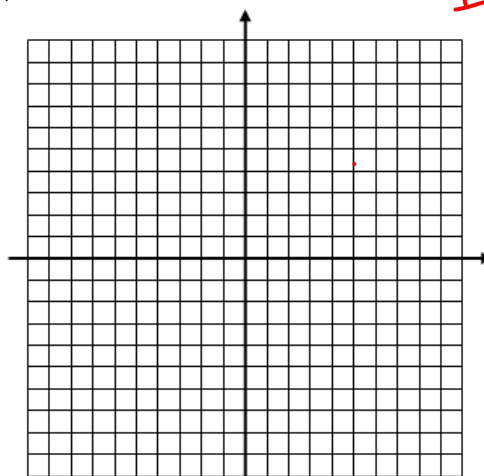
4

<u>Cubic Functions</u>
Largest degree of the function is 3

$$f(x) = x^3$$

^

x	$f(x)$
-2	-8
-1	-1
0	0
1	1
2	8

Domain:

Range:

Apr 23-7:36 AM