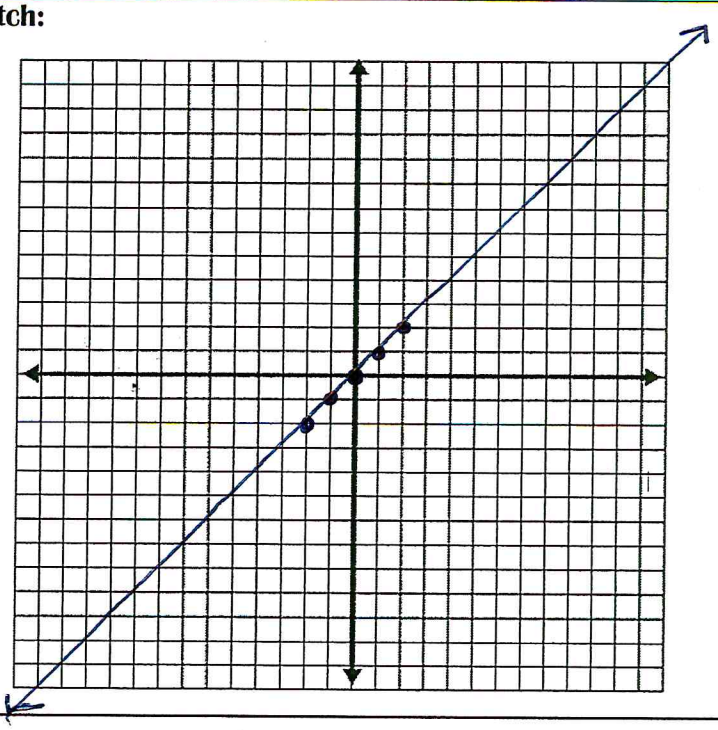
Linear
f(x)= x

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



f(x)= x	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$(-\infty, +\infty)$
Increasing (interval)	$(-\infty, +\infty)$
Decreasing (interval	N/A
Intercepts	x-intercept: (0, 0) y-intercept: (0, 0)
Asymptotes	N/A
End behavior	Left: as $x \to -\infty$, $y \to -\infty$ Right as $x \to +\infty$, $y \to +\infty$
Symmetry	odd

Additional info:

Straight line

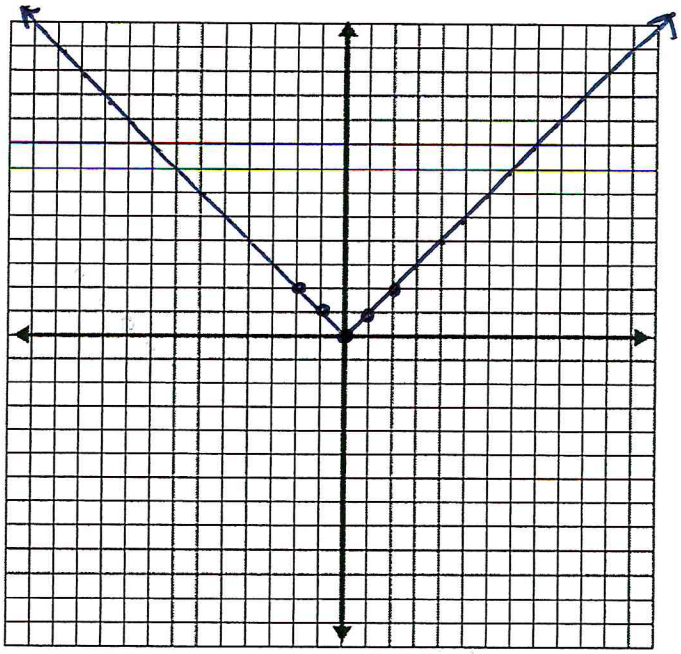
Absolute Value
f(x) = |x|

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



f(x)= |x|	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$[0, +\infty)$
Increasing (interval)	$(0, +\infty)$
Decreasing (interval	$(-\infty, 0)$
Intercepts	x-intercept: (0,0) y-intercept: (0, 0)
Asymptotes	N/A
End behavior	Left: $x \to -\infty$, $y \to +\infty$ Right as $x \to +\infty$, $y \to +\infty$
Symmetry	Odd

Additional info:

"V-shaped"

Polynomial (Quadratic)

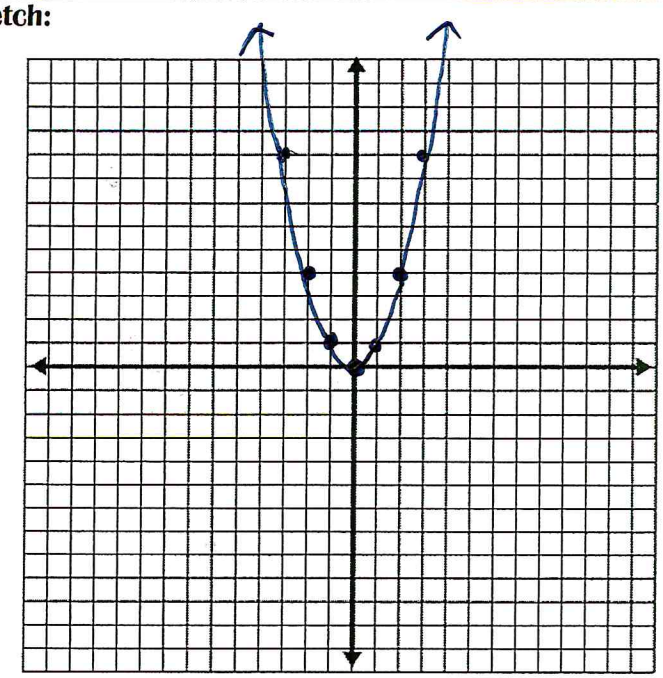
$f(x) = x^2$

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



$f(x) = x^2$	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$[0, +\infty)$
Increasing (interval)	$(0, +\infty)$
Decreasing (interval	$(-\infty, 0)$
Intercepts	x-int. (0,0) y-int: (0, 0)
Asymptotes	N/A
End behavior	left: as $x \to -\infty$ $y \to +\infty$ Right: as $x \to +\infty$ $y \to +\infty$
Symmetry	even

Additional info:

Parabola ("u-shaped")

Polynomial (Cubic)

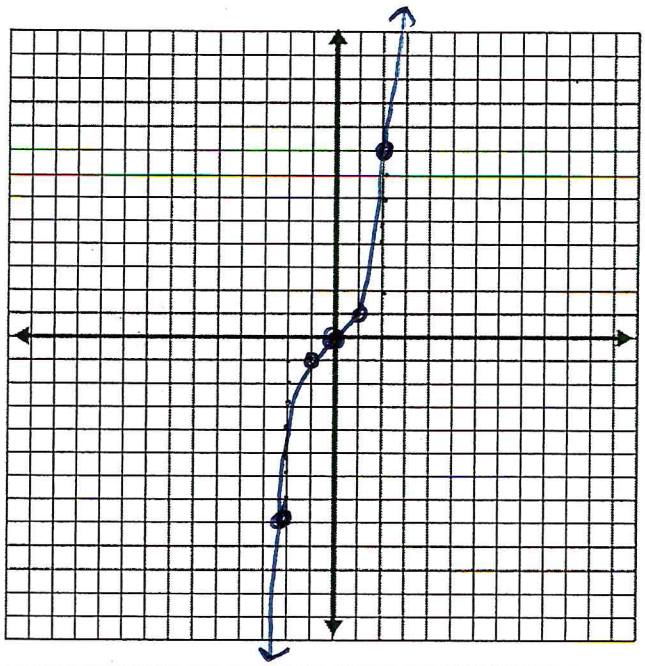
$f(x) = x^3$

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



$f(x) = x^3$	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$(-\infty, +\infty)$
Increasing (interval)	$(0, +\infty)$
Decreasing (interval	$(-\infty, 0)$
Intercepts	x-int: (0,0) y-int: (0,0)
Asymptotes	N/A
End behavior	Left: as $x \to -\infty$ $y \to -\infty$ Right: as $x \to +\infty$ $y \to +\infty$
Symmetry	odd

Additional info:

arrows point in opposite directions, one is up and the other is down

Radical (Square Root)

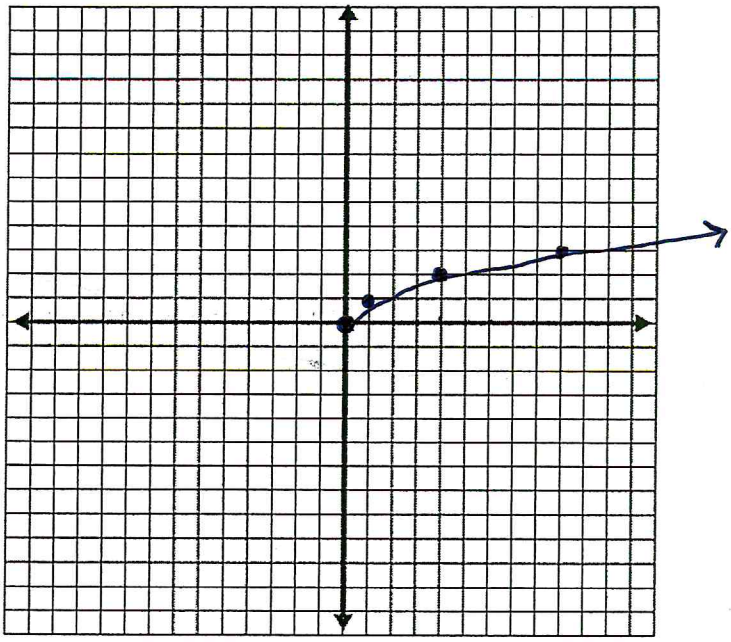
f(x) = $\sqrt{x}$

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



f(x)= $\sqrt{x}$	
Domain (interval)	$[0, +\infty)$
Range (interval)	$[0, +\infty)$
Increasing (interval)	$(0, +\infty)$
Decreasing (interval	N/A
Intercepts	x-int (0,0) y-int (0,0)
Asymptotes	N/A
End behavior	Left: none, no arrow right: as $x \to +\infty$ $y \to +\infty$
Symmetry	None

Additional info:

this parent function ~~stops~~ starts from the origin.

You can't take the square root of a negative number!

Radical (Cubic Root)

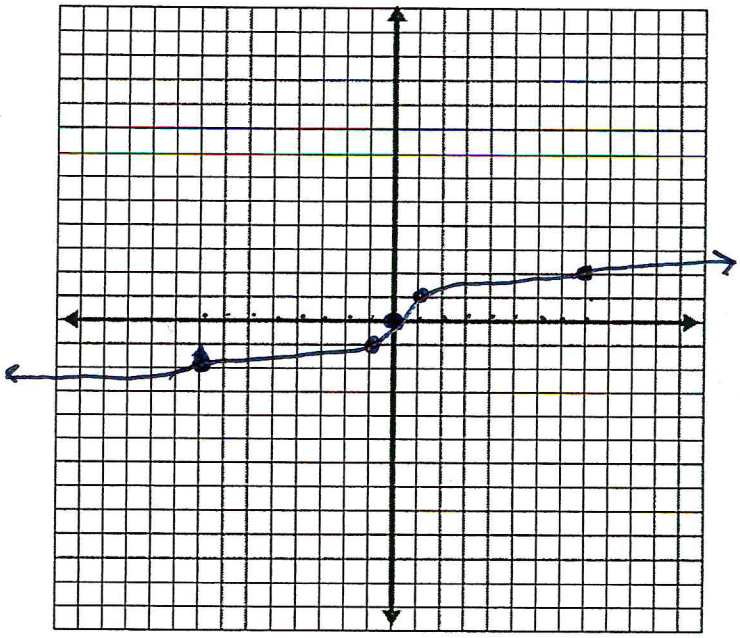
$f(x) = \sqrt[3]{x}$

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



$f(x) = \sqrt[3]{x}$	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$(-\infty, +\infty)$
Increasing (interval)	$(-\infty, +\infty)$
Decreasing (interval	N/A
Intercepts	x-int: (0,0) y-int: (0,0)
Asymptotes	N/A
End behavior	Left: as $x \to -\infty$ $y \to -\infty$ Right: as $x \to +\infty$ $y \to +\infty$
Symmetry	N/A

Additional info:

- a "sideways S"
- one arrow points left and the other points right

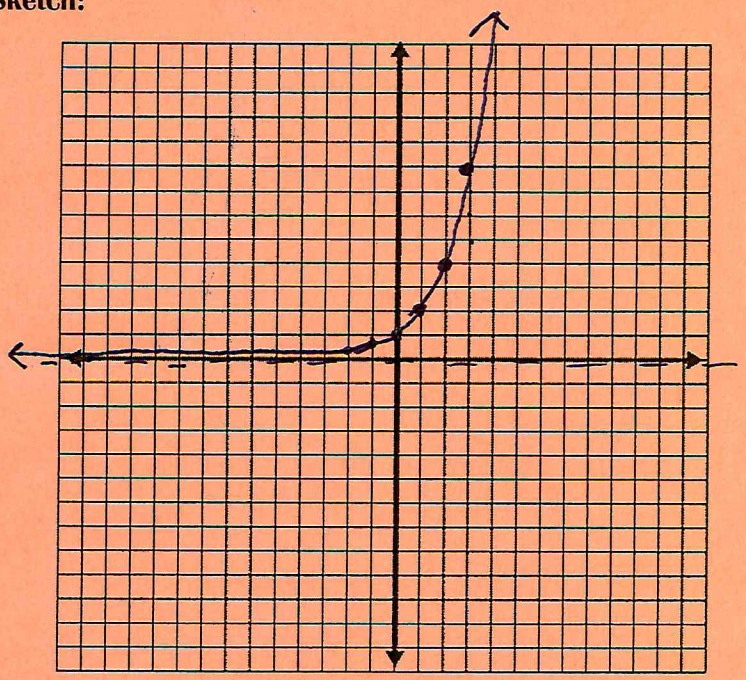
Exponential Growth
$f(x) = 2^x$

Table of Values

choose two positive, two negative and zero for values of x

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

Sketch:



$f(x) = 2^x$	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$(0, +\infty)$
Increasing (interval)	$(0, +\infty)$
Decreasing (interval	N/A
Intercepts	X-int: None y-int: (0, 1)
Asymptotes	$y = 0$
End behavior	left: as $x \to -\infty$ $y \to 0$ right: as $x \to +\infty$ $y \to +\infty$
Symmetry	N/A

Additional info:

An asymptote is a line that a function will get closer and closer to but never touch or crosses. In this case that line is the x-axis, where $y = 0$. An asymptote influences end behavior

Exponential Decay

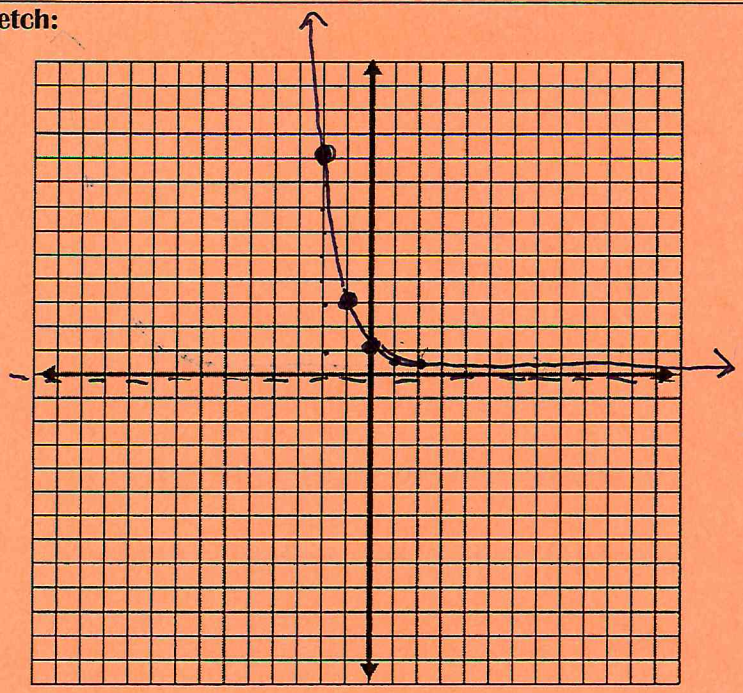
$f(x)=\left(\frac{1}{3}\right)^x$

Table of Values

choose two positive, two negative and zero for values of x

x	y
-2	9
-1	3
0	1
1	1/3
2	1/9

Sketch:



$f(x)=\left(\frac{1}{3}\right)^x$	
Domain (interval)	$(-\infty, +\infty)$
Range (interval)	$(0, +\infty)$
Increasing (interval)	N/A
Decreasing (interval	$(-\infty, +\infty)$
Intercepts	x-int: none y-int: (0,1)
Asymptotes	$y=0$
End behavior	Left: as $x \to -\infty$, $y \to +\infty$ Right: as $x \to +\infty$ $y \to 0$
Symmetry	N/A

Additional info:

See exp. growth.