

Unit 3: Day 8 Notes

Name: _____

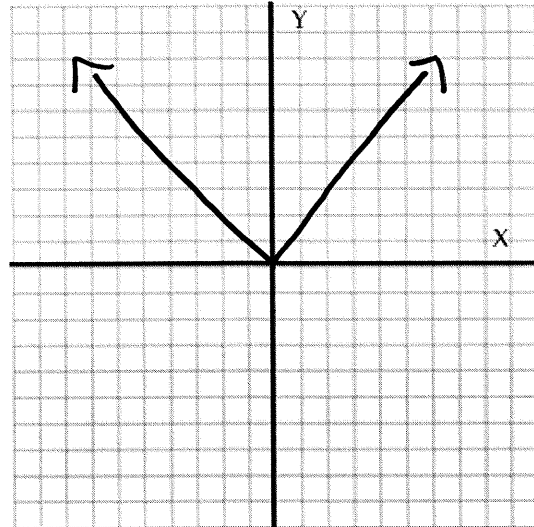
Objective: I can represent mathematical relationships using graphs.

Absolute value Functions:

Equation: $y = |x|$

Key features:

- "V" shaped
- changes direction, increase and decrease
- min or max
- opens up or down
- x-intercepts
- y-intercepts

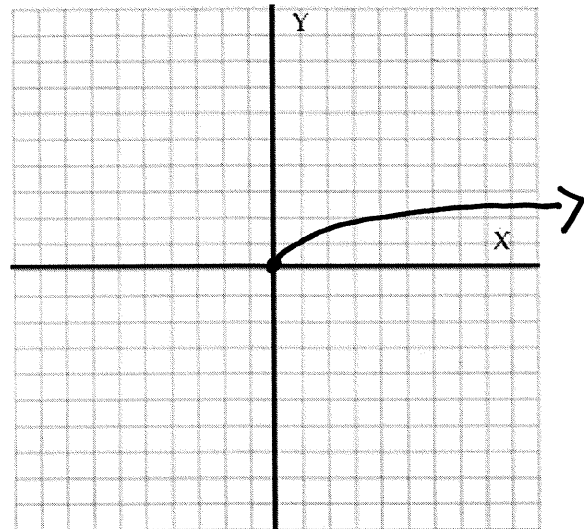


Square root Functions:

Equation: $y = \sqrt{x}$

Key features:

- "grow" slowly
- increase or decrease
- x-intercepts
- y-intercepts
- min or max
- half a "U" tipped over

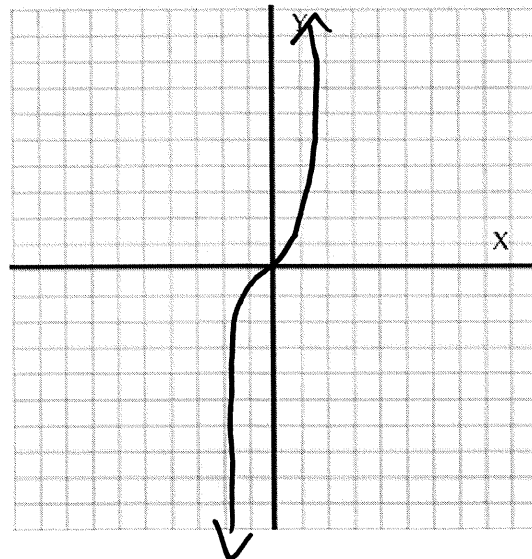


Cubic Functions:

Equation: $y = x^3$

Key features:

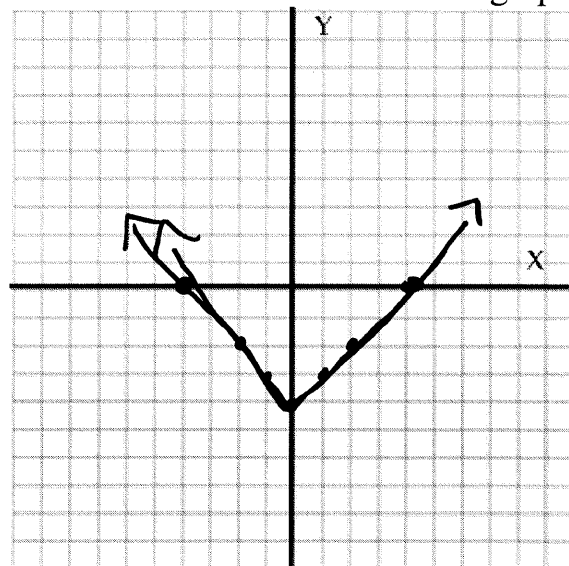
- has a curve
- increases or decreases
- no min or max
- x-intercepts
- y-intercepts



Ex 1) Evaluate each function at the given values. Graph the values and determine if the graph is absolute value, square root or cubic.

$$f(x) = |x| - 4$$

x	$f(x) = x - 4$	f(x)
-2	$f(-2) = -2 - 4$ $2 - 4 = -2$	$(-2, -2)$
-1	$f(-1) = -1 - 4$ $1 - 4 = -3$	$(-1, -3)$
0	$f(0) = 0 - 4$ $0 - 4$	$(0, -4)$
1	$f(1) = 1 - 4$ $1 - 4 = -3$	$(1, -3)$
2	$f(2) = 2 - 4$ $2 - 4 = -2$	$(2, -2)$



x-int: $(-4, 0), (4, 0)$ y-int: $(0, -4)$

Min. or Max: min. $(0, -4)$

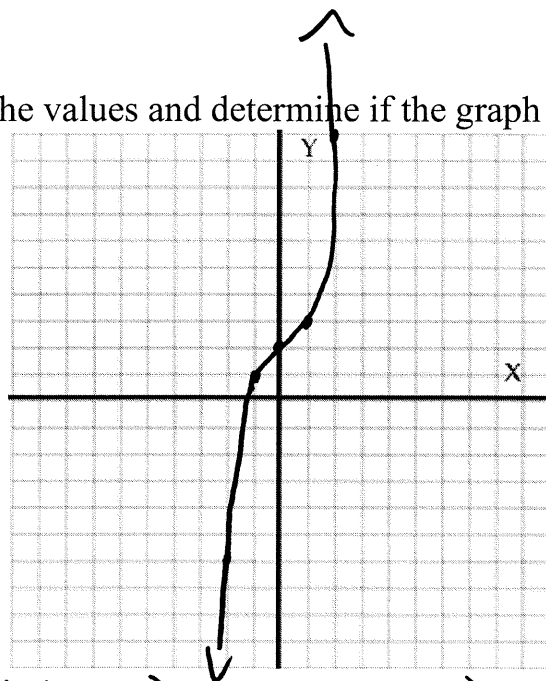
Is the graph increasing or decreasing? both

Type of Function: absolute value

Ex 2) Evaluate each function at the given values. Graph the values and determine if the graph is absolute value, square root or cubic.

$$f(x) = x^3 + 2$$

x	$f(x) = x^3 + 2$	f(x)
-2	$f(-2) = (-2)^3 + 2$ $-8 + 2 = -6$	$(-2, -6)$
-1	$f(-1) = (-1)^3 + 2$ $-1 + 2 = 1$	$(-1, 1)$
0	$f(0) = 0^3 + 2$ $0 + 2 = 2$	$(0, 2)$
1	$f(1) = 1^3 + 2$ $1 + 2 = 3$	$(1, 3)$
2	$f(2) = 2^3 + 2$ $8 + 2 = 10$	$(2, 10)$



x-int: $(-1.3, 0)$ y-int: $(0, 2)$

Min. or Max: no

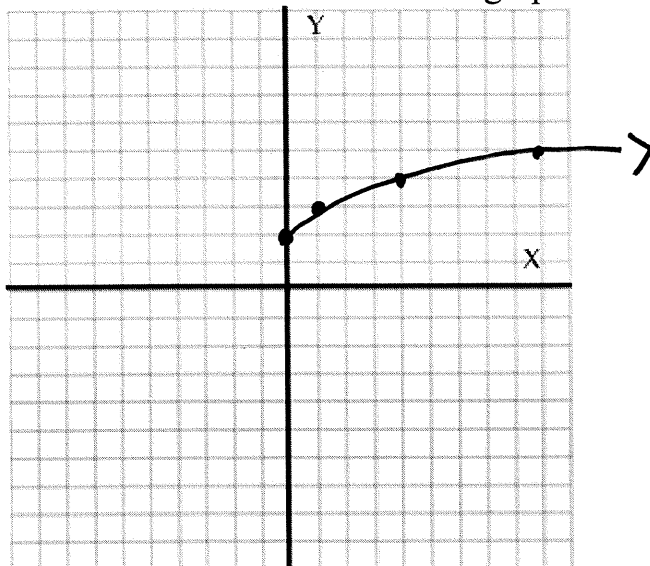
Is the graph increasing or decreasing? increasing

Type of Function: Cubic

Ex 3) Evaluate each function at the given values. Graph the values and determine if the graph is absolute value, square root or cubic.

$$f(x) = \sqrt{x} + 2$$

x	$f(x) = \sqrt{x} + 2$	f(x)
0	$f(0) = \sqrt{0} + 2$ $0 + 2 = 2$	(0, 2)
1	$f(1) = \sqrt{1} + 2$ $1 + 2 = 3$	(1, 3)
4	$f(4) = \sqrt{4} + 2$ $2 + 2 = 4$	(4, 4)
9	$f(9) = \sqrt{9} + 2$ $3 + 2 = 5$	(9, 5)
16	$f(16) = \sqrt{16} + 2$ $4 + 2 = 6$	(16, 6)



x-int: none y-int: (0, 2)

Min. or Max: min

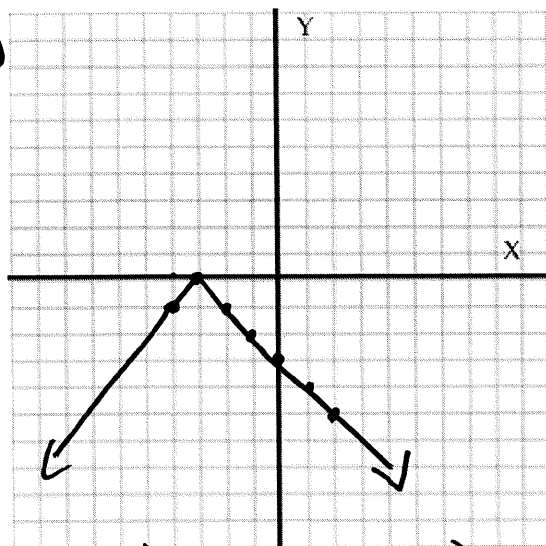
Is the graph increasing or decreasing? increasing

Type of Function: square root

Ex 4) Evaluate each function at the given values. Graph the values and determine if the graph is absolute value, square root or cubic.

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

x	$f(x) = - x + 3 $	f(x)
-2	$f(-2) = - -2 + 3 $ $- 1 = -1$	(-2, -1)
-1	$f(-1) = - -1 + 3 $ $- 2 = -2$	(-1, -2)
0	$f(0) = - 0 + 3 $ $- 3 = -3$	(0, -3)
1	$f(1) = - 1 + 3 $ $- 4 = -4$	(1, -4)
2	$f(2) = - 2 + 3 $ $- 5 = -5$	(2, -5)



x-int: (-3, 0) y-int: (0, -3)

Min. or Max: max

Is the graph increasing or decreasing? both

Type of function: absolute value

