

Name _____
Date _____

Advanced Algebra
Unit 2: Families of Functions
Homework #6

I can represent a translation in multiple ways

The Given parent function is $y = x^3$

Fill each of the missing columns in using the proper notation.

Words	General Function notation	Specific Function Notation using the given parent function
3 to the right	$y = f(x-3)$	$y = (x-3)^3$
6 Right 2 up	$y = f(x-6) + 2$	$f(x) = (x-6)^3 + 2$
6 down	$y = f(x) - 6$	$y = x^3 - 6$
2 to the left and 3 down	$y = f(x+2) - 3$	$y = (x+2)^3 - 3$

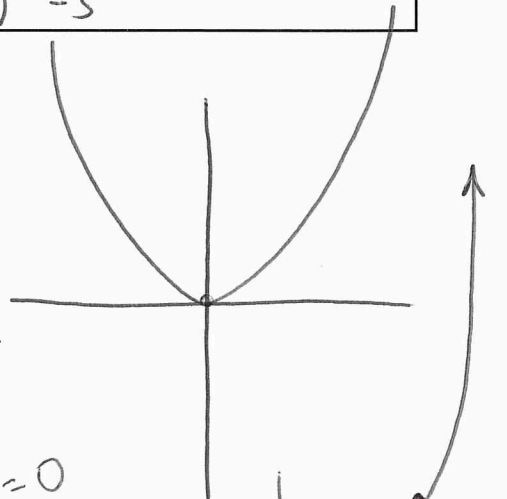
2) Given a parabola $y = x^2$

State the domain All Real #'s

State the range $y \geq 0$

For what x values is f(x) increasing $x > 0$

For what x values is f(x) decreasing $-\infty \leq x < 0$



3) Given the function $y = 2(x-3)^3 + 6$

Find f(5) 22

Given f(x) = 185 find x 7.47

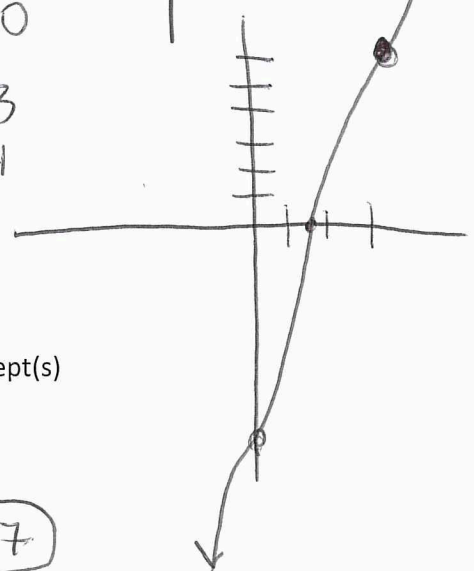
y-int $vars(0) = -48$

$$2(x-3)^3 + 6 = 0$$

$$(x-3)^3 = -3$$

$$x-3 = -1.144$$

$$x = 1.856$$



I can find x and y intercepts:

Solve the following equations, they are set up for you to find the x intercept(s)

$$185 = 2(x-3)^3 + 6$$

$$(x-3)^3 = 89.5$$

$$x-3 = 4.47$$

$$x = 7.47$$

$$4) 0 = 2(x-3)^2 - 18$$

$$2(x-3)^2 - 18 = 0$$

$$(x-3)^2 = 9$$

$$x-3 = \pm 3$$

$$x = 6 \text{ or } 0$$

$$6) 0 = 3(x-4)^3 - 21$$

$$3(x-4)^3 - 21 = 0$$

$$(x-4)^3 = 7$$

$$x = 5.91$$

Find the x and y intercepts of the following functions:

$$8) f(x) = 4(x-8)^2 - 17$$

$$4(x-8)^2 - 17 = 0$$

$$x-8 = \pm 2.06$$

$$x = 10.06$$
$$5.94$$

X intercept is:

$$10.06 \text{ and } 5.94$$

y intercept is:

$$239$$

VARS (0) =
Using calculator

$$5) 0 = |x-4| - 16$$

$$|x-4| = 16$$

$$x = 20$$

$$x-4 = -16$$

$$x = -12$$

$$7) 0 = 2(x-4)^{\frac{1}{3}}$$

$$2(x-4)^{\frac{1}{3}} = 0$$

$$(x-4)^{\frac{1}{3}} = 0$$

$$x = 4$$

$$9) y = 3|x-2| - 28$$

$$3|x-2| - 28 = 0$$

$$|x-2| = 9.33$$

$$x-2 = 9.33$$

$$x-2 = -9.33$$

X intercept is:

$$11.33$$

$$-7.33$$

y intercept is:

$$(0, -22)$$

VARS (0)