

Unit Review

Date: Apr. 16 / 15

Review Quiz 1 and Quiz 2

Recognizing a Quadratic Relation

from the equation

$$y = x^2; y = 3x^2 - 7x + 2; y = -(x-7)^2 + 11$$

from a table of values

2nd differences are constantUnderstanding $y = a(x-h)^2 + k$

$$y = -2(x-3)^2 + 5$$

$$y = 2(x+4)^2 + 7$$

$$y = \frac{1}{4}(x-5)^2 - 6$$

vertex

$$(3, 5)$$

$$(-4, 7)$$

$$(5, -6)$$

moving left/right vs. up/down

3 right, 5 up

4 left, 7 up

recognizing max. vs. min

 $a \rightarrow \text{neg} \rightarrow \text{max}$ $a \rightarrow \text{positive} \rightarrow \text{min.}$

What IS the max/min value?

max 5

min 7

min. -6

down

up

up

direction of opening

stretch vs. compression

$$a > 1 (\text{near } a < 1)$$

Sketching curves in vertex form

$$y = a(x-h)^2 + k$$

up

shouty

Word Problems ... see "Understanding" above

Determining the equation of a parabola

xy

start with the vertex, then substitute another known point for (x, y) and solve to get "a" by itself

write the equation as your conclusion

vertex is $(8, -2)$ through point $(1, 3)$

$$y = a(x-8)^2 - 2$$

$$3 = a(1-8)^2 - 2$$

$$3 = a(-7)^2 - 2$$

$$3 = 49a - 2$$

$$3 + 2 = 49a$$

$$5 = 49a$$

$$\frac{5}{49} = a$$

$$a = \frac{5}{49}$$

Determining the y-intercept

let $x = 0$, then solve for y

$$y = 2x^2 - 7x - 9$$

$$y = 2(x-3)^2 + 1$$

$$y = -9 \quad \checkmark$$

$$= 2(0-3)^2 + 1$$

$$= 2(0)^2 - 7(6) - 9$$

$$= 2(-3)^2 + 1$$

$$= 0 + 0 - 9$$

$$= 2(9) + 1$$

$$= -9$$

$$= 18 + 1$$

$$= 19 \quad \checkmark$$

$$= 19 \quad \checkmark$$

$\therefore y = \frac{5}{49}(x-8)^2 - 2$
 $\therefore y = \text{in the equation.}$