

Section 10.1  
Exploring Quadratic Graphs

Quadratic Grapher



Quadratic function (Standard form) -

$$ax^2 + bx + c, a \neq 0$$

Parent function

$$y = x^2$$

Parabola

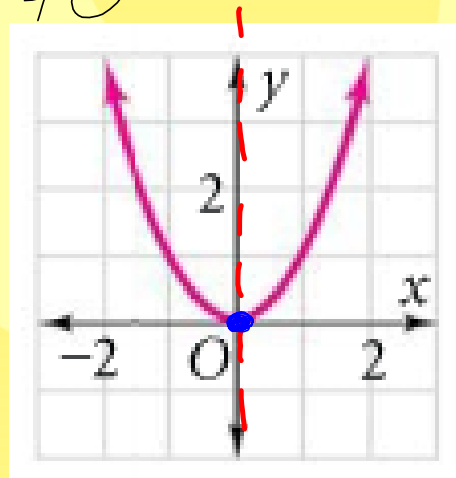
Axis of symmetry

$$AOS \quad x = 0$$

Vertex

Minimum or maximum point

vertex



Exploring a  
What does the number in front of  $x^2$  do?

$$y = ax^2$$

- if  $a$  is positive and bigger than 1, the graph is skinnier as in stretch vertically

- if  $a$  is between 0 and 1, the graph is wider as in stretched horizontally

$$\frac{1}{2}, \frac{3}{4}, \frac{1}{3}$$

- if  $a$  is negative, the graph is flipped upside down

Reflection

## Exploring c

What does the constant at the end do?

- if c is positive, the graph moves up

$$y = 3x^2 + 4$$

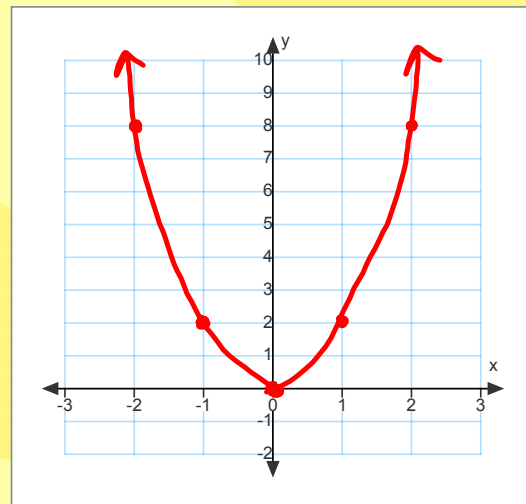
- if c is negative, the graph moves down

$$y = 3x^2 - 2$$

Graphing by Hand...

1.  $y = 2x^2$

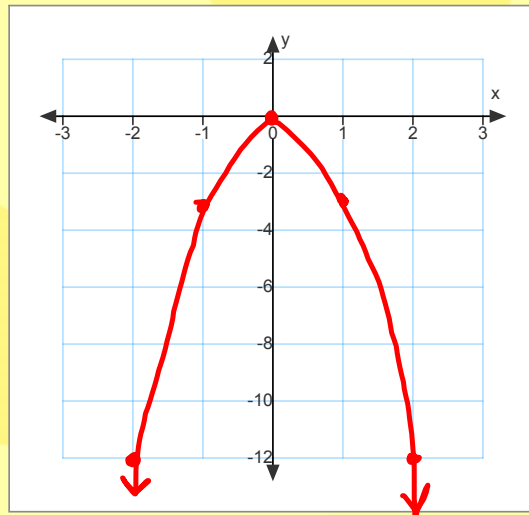
$x$	$2x^2$	$y$
-2	$2(-2)^2$	8
-1	$2(-1)^2$	2
0	$2(0)^2$	0
1		2
2		8



Graphing by Hand...

1.  $y = -3x^2$

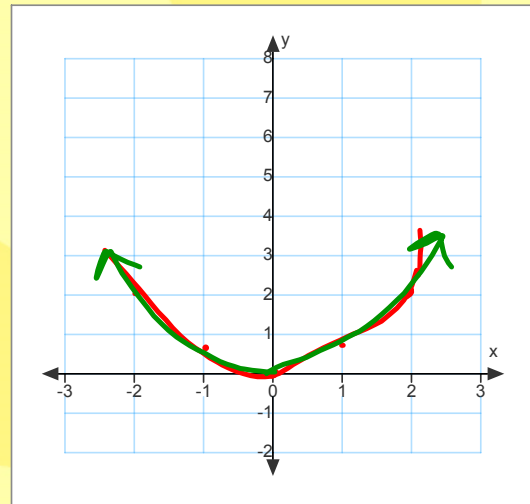
$x$	$-3x^2$	$y$
-2	$-3(-2)^2$	-12
-1	$-3(-1)^2$	-3
0		0
1		-3
2		-12



Graphing by Hand...

$$1. y = 1/2x^2$$

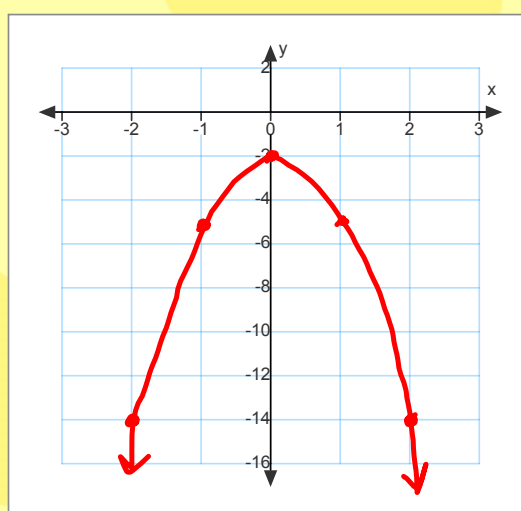
x	$1/2x^2$	y
-2		2
-1		.5
0		0
1		.5
2		2



Graphing by Hand...

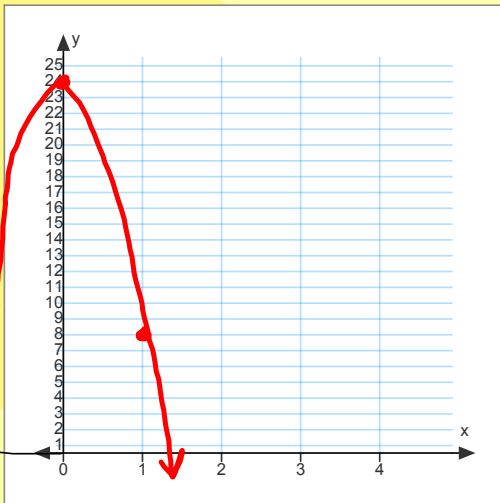
1.  $y = -3x^2 - 2$

$x$	$-3x^2 - 2$	$y$
-2	$-3(-2)^2 - 2$	-14
-1	$-3(-1)^2 - 2$	-5
0		-2
1		-5
2		-14





- 5 a. Suppose a squirrel is in a tree 24 ft above the ground. She drops an acorn. The function  $h = -16t^2 + 24$  gives the height of the acorn in feet after  $t$  seconds. Graph this function.



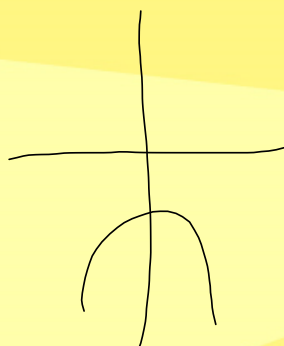
$$1 \rightarrow -16(1)^2 + 24$$
$$8$$

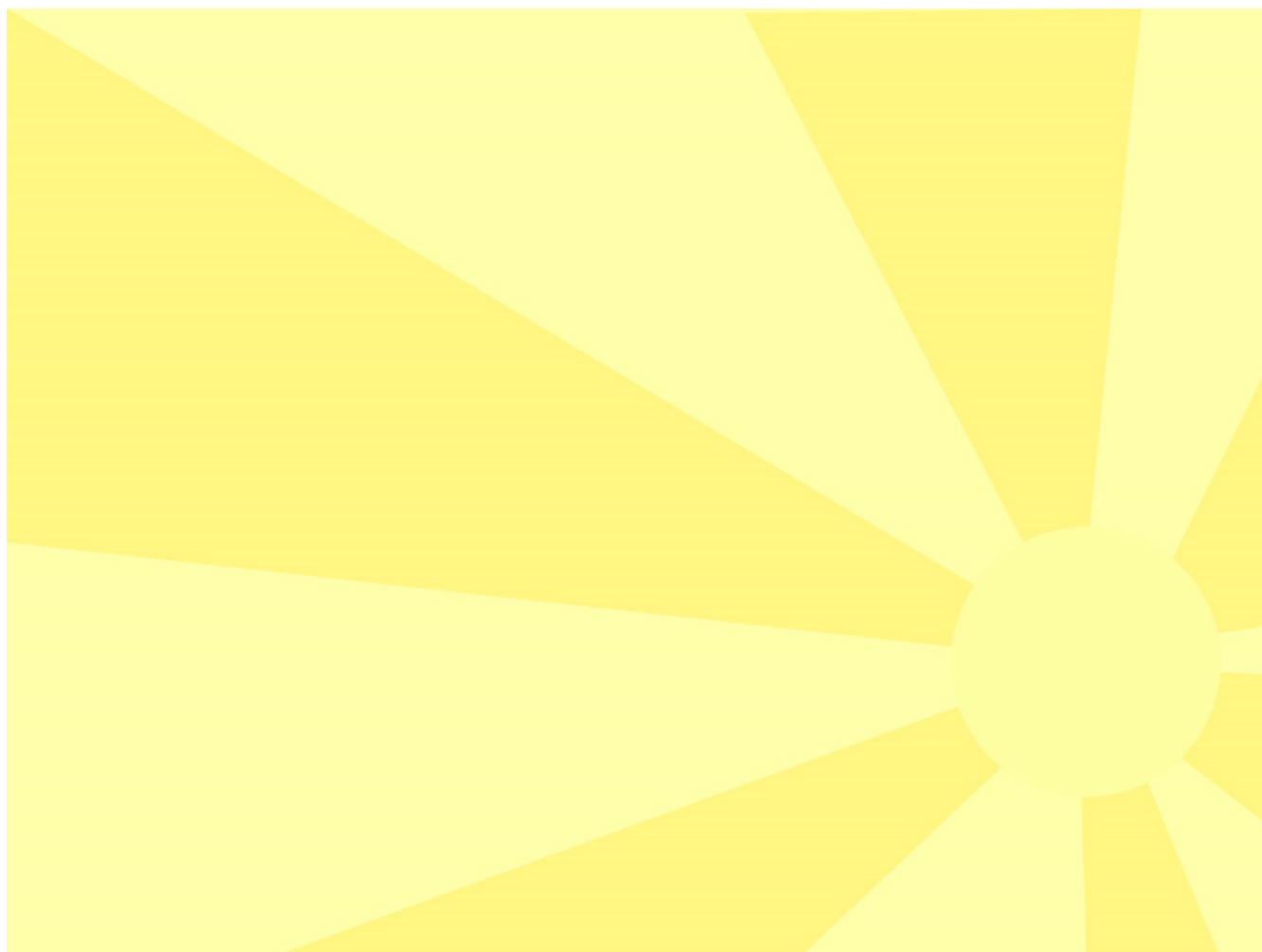
Homework: pg. 553 #1 - 4, 7, 9 - 19, 21 -  
26, 38

Do #4, #9, #14, #15, #17 by hand

Do #7, #18, and #19 on calc

Do #38 by hand and by calc





## Attachments

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Quadratic Grapher