

3/25 Algebra 1 - Unit 7 - Graphing Quadratics

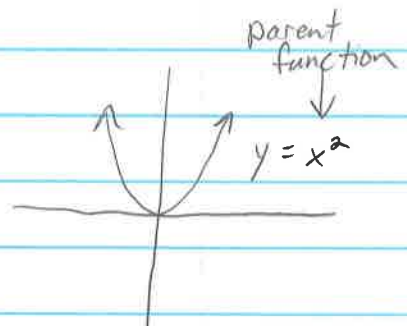
8.1A Characteristics of Quadratics

See 2 examples on graph paper.

Quadratic Function

Standard Form: $f(x) = ax^2 + bx + c$

$$y = ax^2 + bx + c$$



The graph of a quadratic is a curve. This curve is called a parabola.
Vertex - lowest or highest point.

Axis of Symmetry (AOS) - the vertical line (\updownarrow) that goes through the vertex and cuts the parabola in half. (It is the x-value of the vertex)

Solutions/Roots/zeros/x-intercepts - where parabola crosses the x-axis

Y-intercept - where parabola crosses the y-axis (x value is 0)

"c" value when in standard form

Direction of a quadratic is determined by "a-value"

- If $a > 0$ (positive), it opens up and has a minimum value
- If $a < 0$ (negative), it opens down and has a maximum value.

(The max/min value is the y-value of the vertex)

Ex) Does the parabola open up or down?

1) $f(x) = -4x^2 - x + 1$

↓
opens down

(max value)

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

$+ 3x^2 + 3x^2$

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

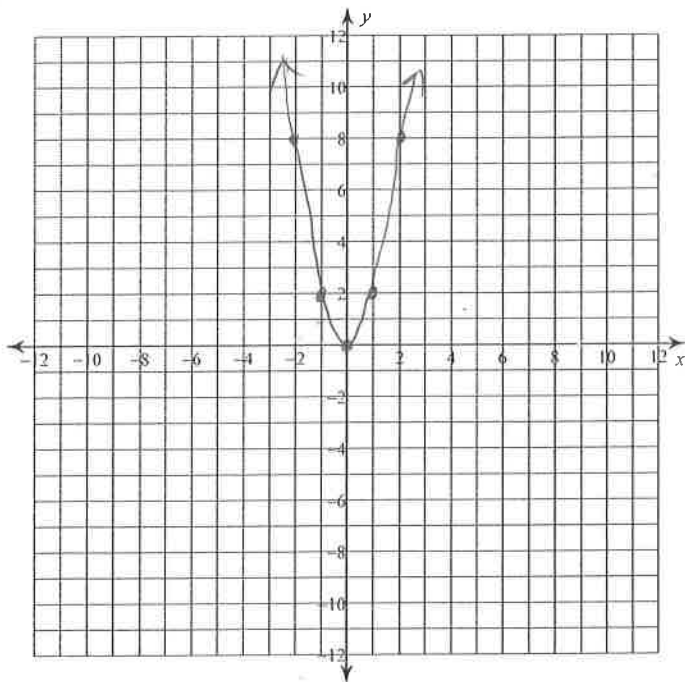
↑
opens up (min value)

← put in standard form first

HW - Worksheet #2-7 only

Graph Paper

1)

Name Notes - Algebra 1 - Downing

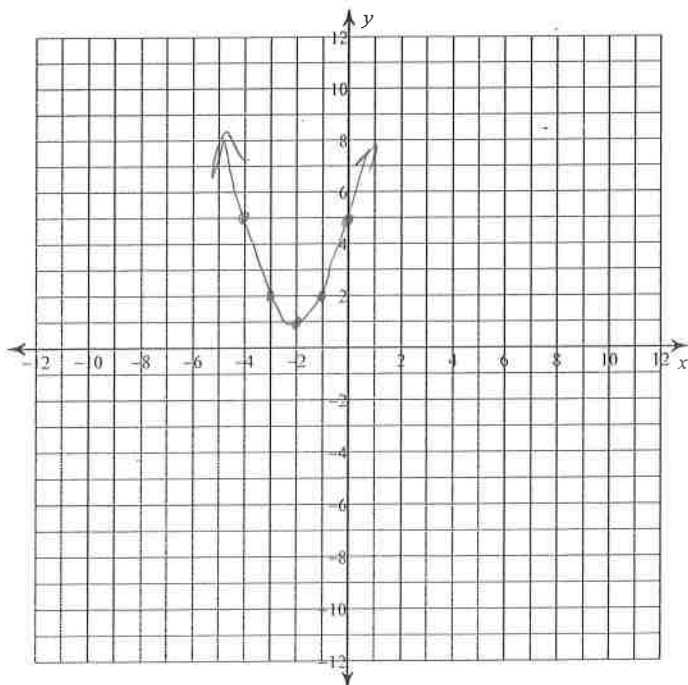
Given the information, make a graph for each function

1.) $y = 2x^2$

x	y	ordered pairs
-2	$2(-2)^2 = 8$	$(-2, 8)$
-1	$2(-1)^2 = 2$	$(-1, 2)$
0	$2(0)^2 = 0$	$(0, 0)$
1	$2(1)^2 = 2$	$(1, 2)$
2	$2(2)^2 = 8$	$(2, 8)$

Solution is 0

2)

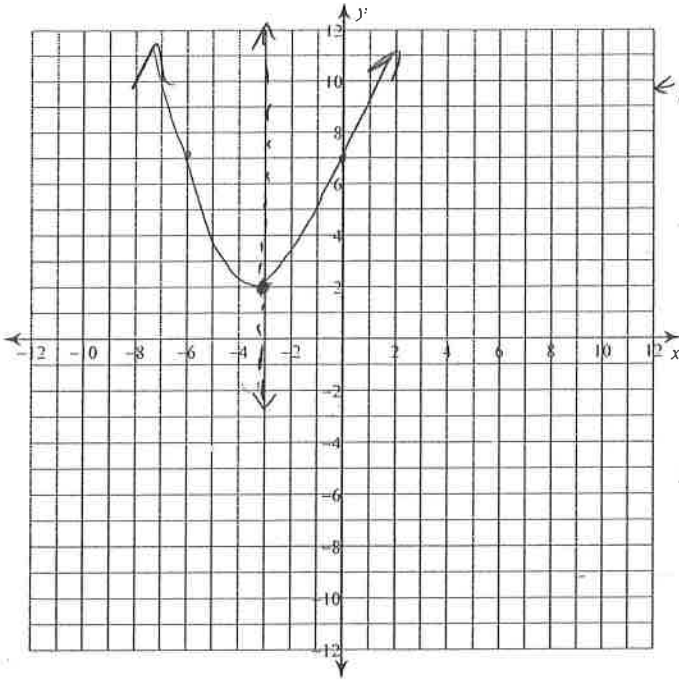


2.) $f(x) = x^2 + 4x + 5$ ordered pairs

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

No Solution (it doesn't cross the x-axis)

3)



← Given this graph
Identify the following:

Vertex: $(-3, 2)$

Zeros: None (does not cross the x-axis)

y-int: $(0, 7)$

AOS: $x = -3$

Max/Min: Minimum $y = 2$

4)

