

5.2 Graph Quadratic Functions in Standard Form

Standard Form:Properties of Quadratics in Standard Form:If $a > 0$:If $a < 0$:

The y-intercept is:

If $|a| > 1$:If $|a| < 1$:

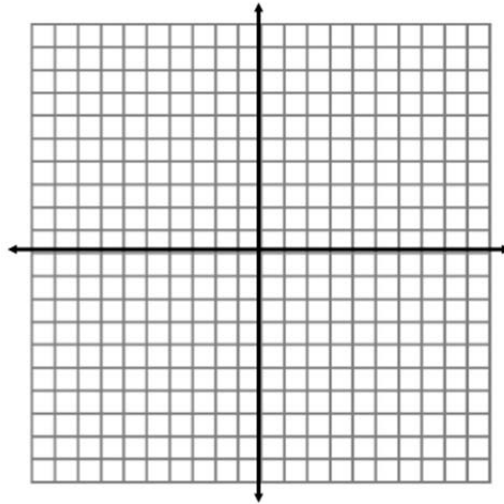
Axis of Symmetry:

Vertex:

Ex 1 Graph:

Axis of Symmetry:

Vertex:

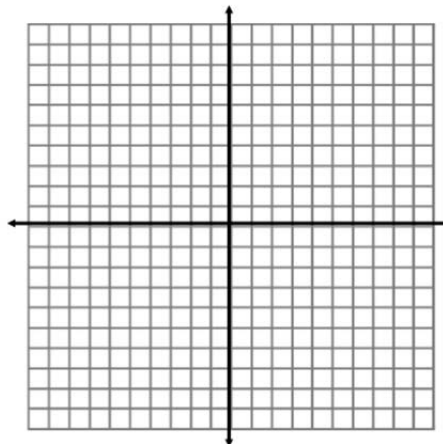


x	f(x)

1-3-5 Graphing Shortcut

Ex. 2: $f(x) = x^2 + 4x - 3$

Ex 3: $f(x) = \frac{1}{2}x^2 + 2x - 3$



Ex 4: Tell whether the quadratic has a minimum, or maximum value. Then find that value.

$$f(x) = \frac{3}{2}x^2 + 6x + 4$$

Write the quadratic equation in standard form.

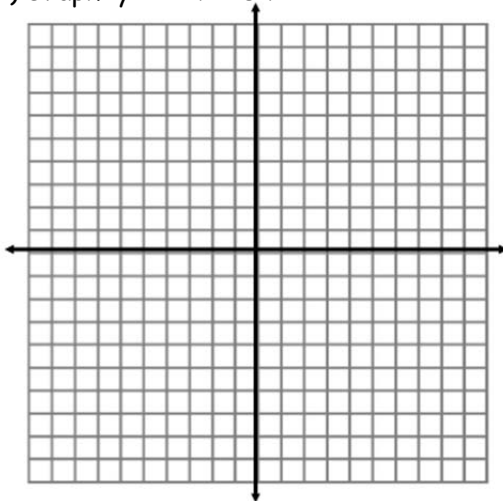
Ex 5: $f(x) = (x + 2)^2 - 4$

Ex 6: $y = -3(x-1)^2 + 4$

Ex 7: Super Kelly is just a newbie with his super powers. He's still at the "able to leap tall buildings in a single bound" stage. He jumped one building and then wanted to find out how high he jumped. He figured out the equation of his jump to be $f(x) = -x^2 + 200x - 8500$. How high did he jump?

You try!

1) Graph: $y = -2x^2 - 8x + 2$



2) Tell whether the quadratic has a minimum, or maximum value. Then find that value.

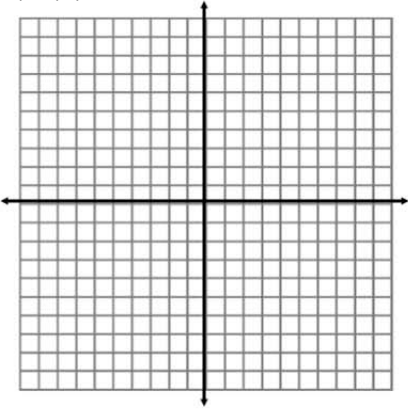
$$f(x) = -\frac{1}{4}x^2 - 7x + 2$$

Summarize your notes:

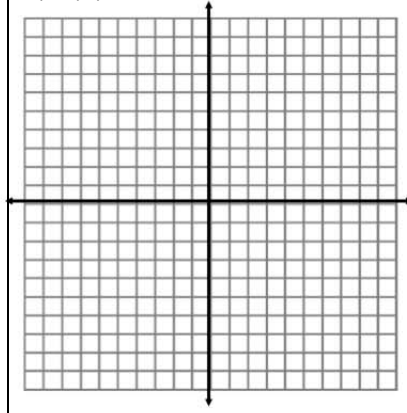
5.2 Practice Problems

Directions: Graph. Label the y-intercept, vertex and axis of symmetry. Graph with a table or using 1-3-5 shortcut.

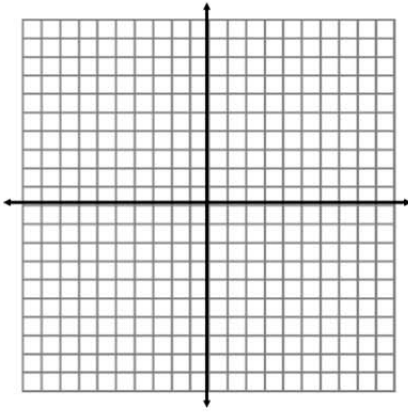
1) $f(x) = -2x^2$



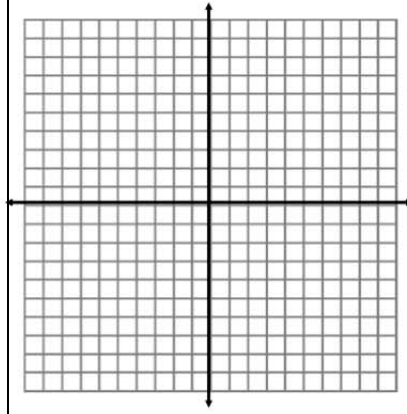
2) $f(x) = x^2 - 3$



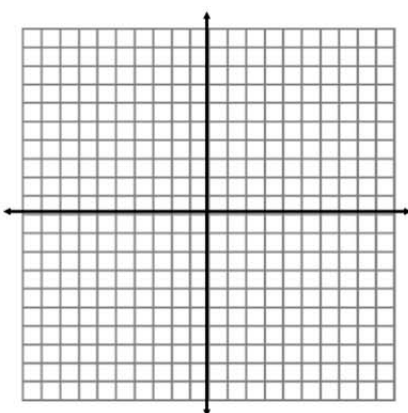
3) $f(x) = -x^2 + 4x + 5$



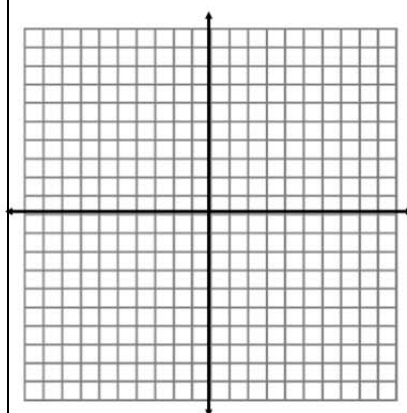
4) $f(x) = x^2 + 6x$



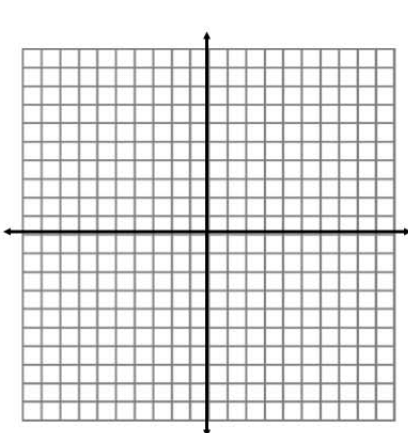
5) $f(x) = 2x^2 - 4x - 7$



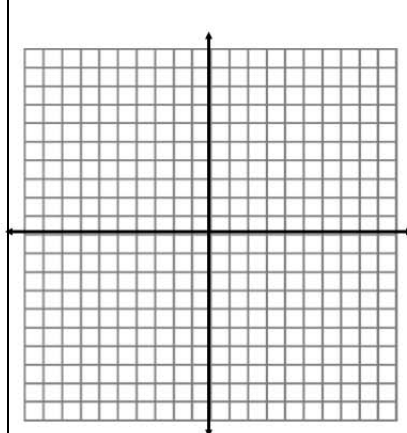
6) $f(x) = \frac{1}{2}x^2 + 2x - 3$



7) $f(x) = \frac{1}{2}x^2 + 4x + 2$



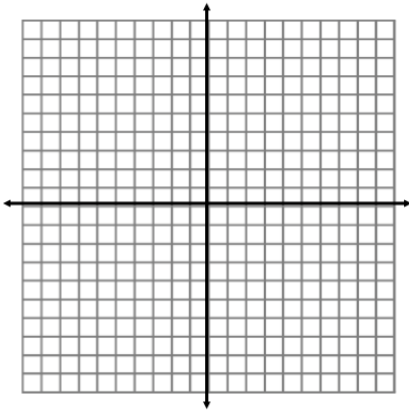
8) $f(x) = -3x^2 - 6x + 5$



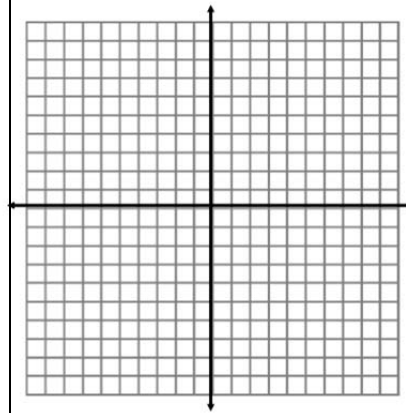
Plot as many points as possible, try for 5, but at least 3.

Plot as many points as possible, try for 5, but at least 3.

9) $f(x) = x^2 - 8x + 6$



10) $f(x) = 2x^2 + 8x - 1$



Directions: Tell whether each function has a minimum value or a maximum value. Find the minimum or maximum value.

11) $y = -6x^2 - 1$

12) $f(x) = 2x^2 + 8x + 7$

13) $y = -3x^2 + 18x - 5$

Directions: Put the quadratic equation in standard form.

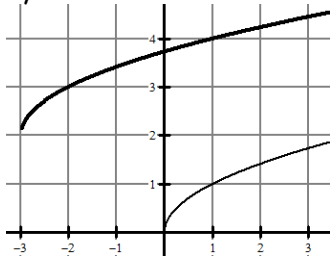
14) $f(x) = -2(x - 1)^2 - 4$

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

16) $(x - 4)^2 - 5$

Algebra Skillz

Below, the graph of $f(x) = \sqrt{x+3} + 2$ is sketched in bold. Its parent function $f(x) = \sqrt{x}$ is represented by the thin curve.



1) Describe the translation of the parent graph.

2) How does the translation relate to the equation?

3) $2\sqrt{12} + 4\sqrt{27}$

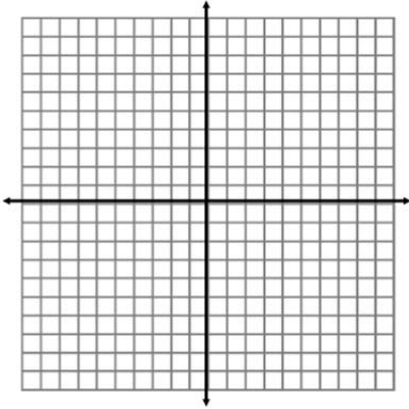
4) $(13x - 10) + (2x^2 - 10x + 4)$

5) Multiply:
 $(2x - 5)(4x + 15)$

6) Factor and solve.
 $x^2 - 11x = 80$

5.2 Application and Extension

1) Graph the following: $f(x) = -2x^2 - 4x + 6$



2) Tell whether there is a minimum value or maximum value. Then find the minimum or maximum value.

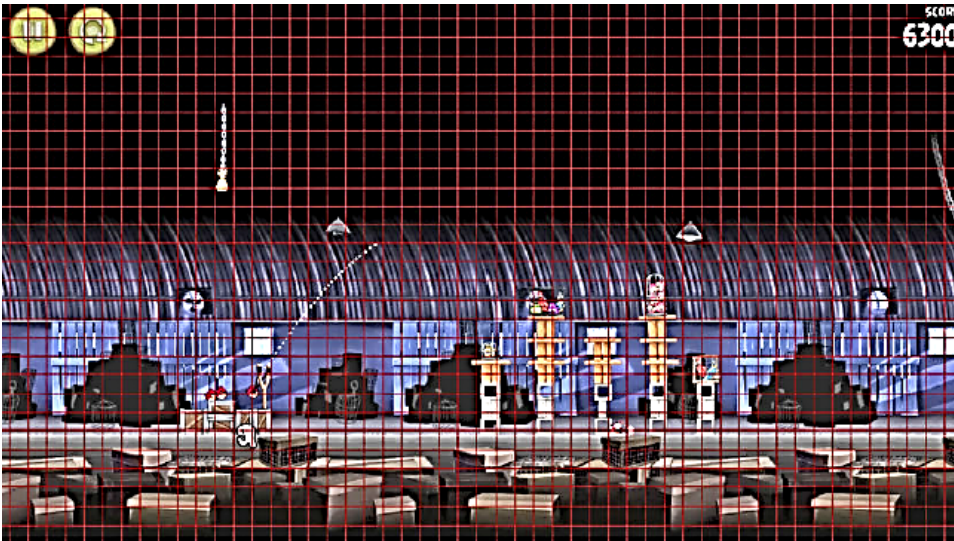
$$y = .2x^2 + 40.2x + 10$$

AMAZINGLY RICH TASK!!!!!!!

Where Would the Angry Birds Land?

The first thing that you **ABSOLUTELY, POSITIVELY, NO DOUBT, MUST DO** is watch the video that is posted in Section 5.2 under the notes. While you watch this video, think about this question: Where would each Angry Bird actually land if it didn't hit anything during flight? The original screenshots can also be found on that webpage if you need a better graphic.

ANGRY BIRD #1: Where would this bird land? Please remember to show your process and explain any mathematical thinking you do. Simply having an answer is not acceptable.



ANGRY BIRD #2: Where would this bird land? Please remember to show your process and explain any mathematical thinking you do. Simply having an answer is not acceptable.

