

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 $|a| < 1$:

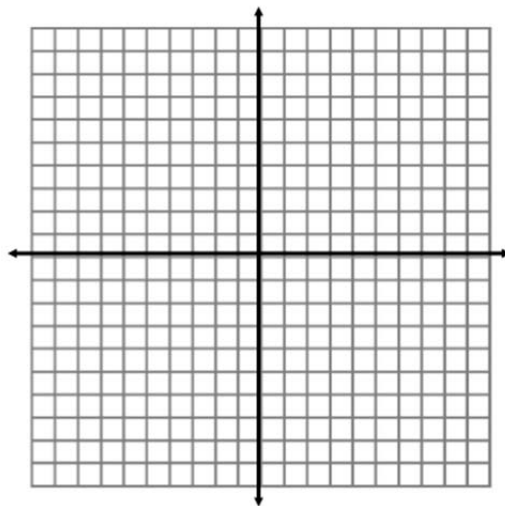
Axis of Symmetry:

Vertex:

Ex 1 Graph:

Axis of Symmetry:

Vertex:

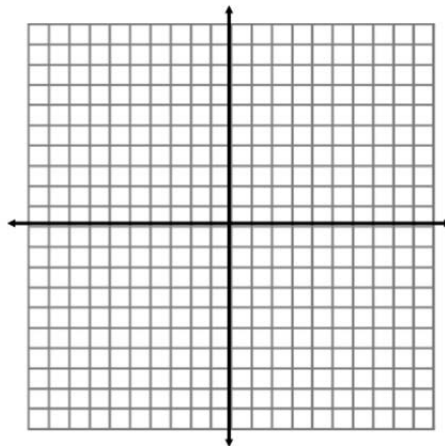


x	f(x)

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.

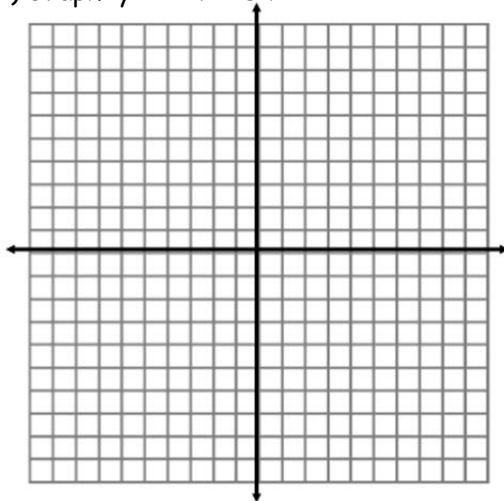
Ex 5: $f(x) = (x + 2)^2 - 4$

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.

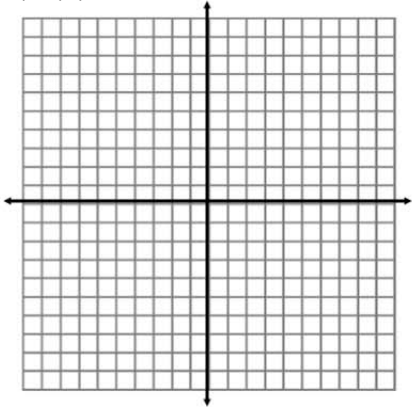
$$f(x) = -\frac{1}{4}x^2 - 7x + 2$$

Summarize your notes:

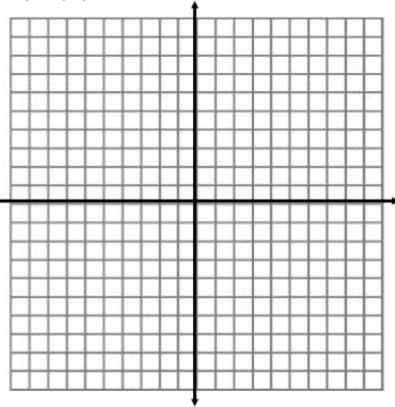
5.2 Practice Problems

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

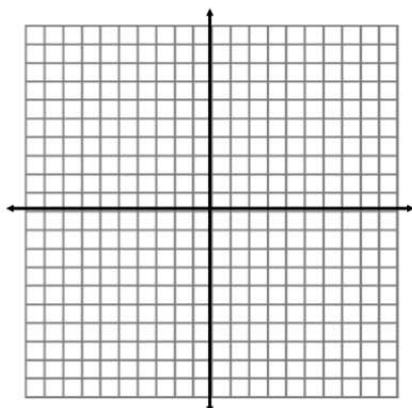
1) $f(x) = -2x^2$



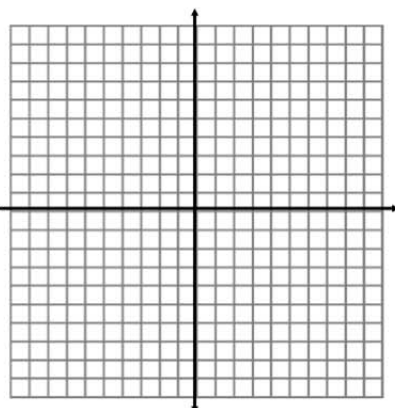
2) $f(x) = x^2 - 3$



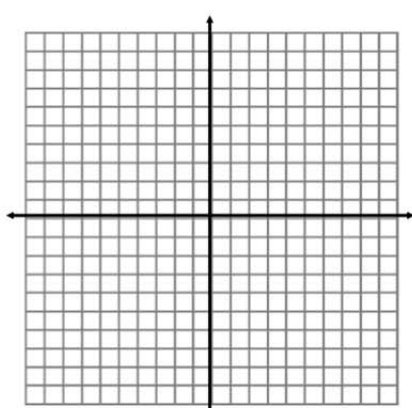
3) $f(x) = -x^2 + 4x + 5$



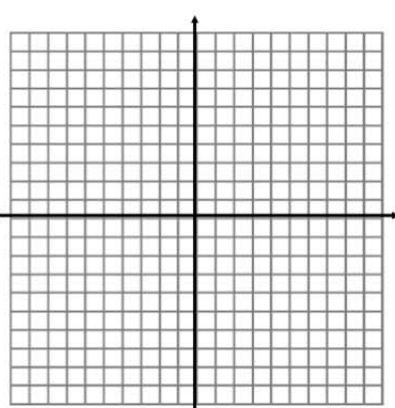
4) $f(x) = x^2 + 6x$



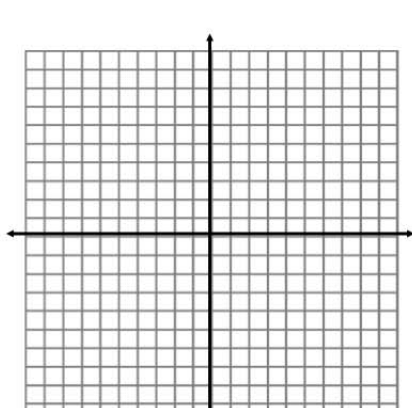
5) $f(x) = 2x^2 - 4x - 7$



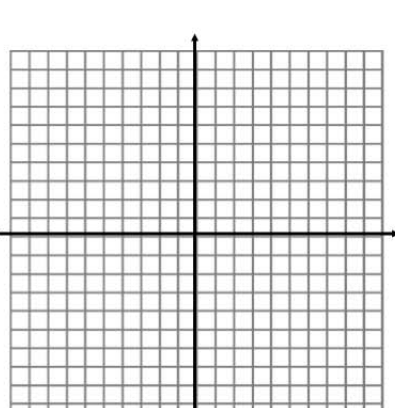
6) $f(x) = \frac{1}{2}x^2 + 2x - 3$



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



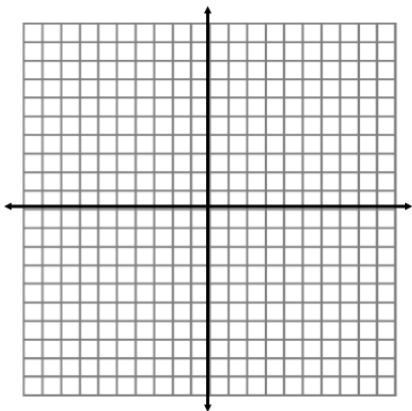
8) $f(x) = -3x^2 - 6x + 5$



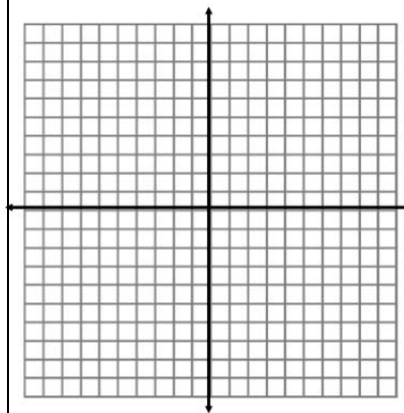
Plot as many points as possible, try for 5, but at least 3.

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.

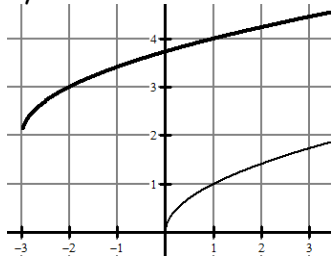
14) $f(x) = -2(x - 1)^2 - 4$

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

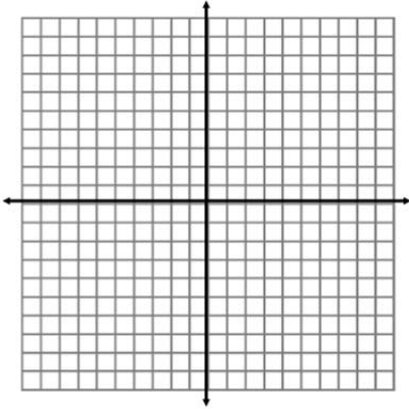
4) $(13x - 10) + (2x^2 - 10x + 4)$

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!!!!!!!

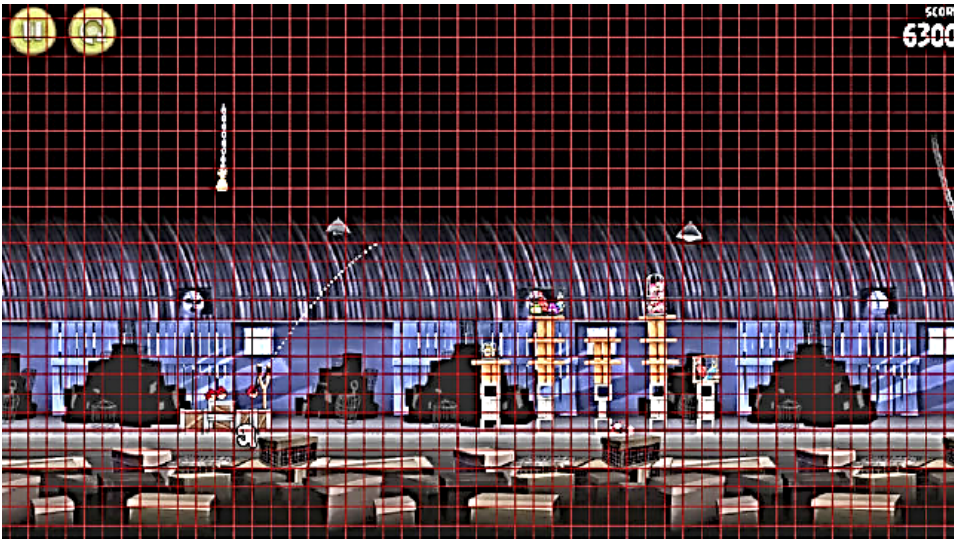
Where Would the Angry Birds Land?

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.

SMP #1: Make sense of problems and persevere in solving them

SMP #4: Model with mathematics

ANGRY BIRD: Where would this bird land?



1) Draw a sketch of this situation. Make sure you include (and label) all relevant information that you may need including any points of interest, x- and y-axes.

2) Make a table of values that models the situation. Will the points be integers? What pattern should there be in the table?

3) Make an equation that models the situation. EXPLAIN how you came up with every value.

4) In complete sentences describe where the bird will land. DEFEND your answer.