

Topic: Graphing**Graphing Quadratics**

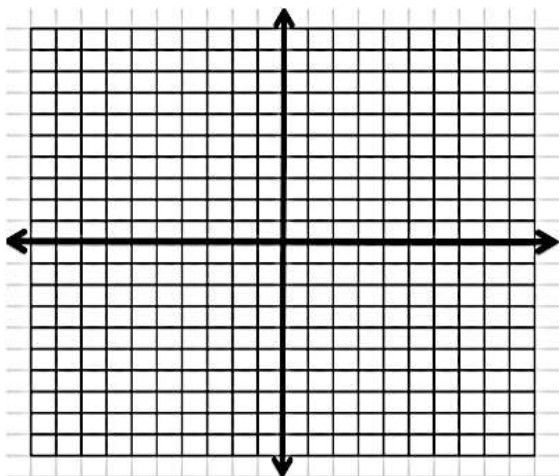
Level 2	Level 3	Level 4
<p>Students will recognize or recall specific vocabulary such as: <i>Maximum, minimum, average rate of change, zeroes, line of symmetry, vertex</i></p> <p>Students demonstrate they have developed the ability to:</p> <ul style="list-style-type: none"> Relate the domain and range of a quadratic function to its graph Calculate and interpret the average rate of change of a function over a specified interval Identify key features of graphs and tables of functions <ul style="list-style-type: none"> Maximum Minimum Line of Symmetry Vertex X-Intercepts Sketch graphs showing key features given a verbal description. 	<p>Students demonstrate they have developed the ability to:</p> <ul style="list-style-type: none"> Interpret key features of graphs and tables of quadratic functions in terms of two quantities Sketch graphs showing key features given the quadratic equation. 	<ul style="list-style-type: none"> Students will demonstrate they have developed the ability to extend their level 3 knowledge to translations.

Level 2

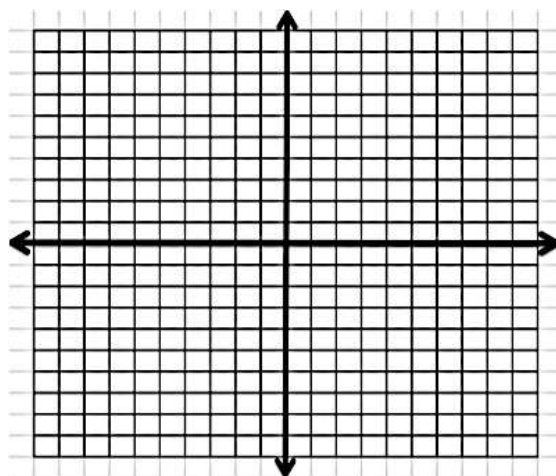
Watch (and take notes) the lecture called [Graphing Quadratic Features](#).

1. Graph the following quadratics features.

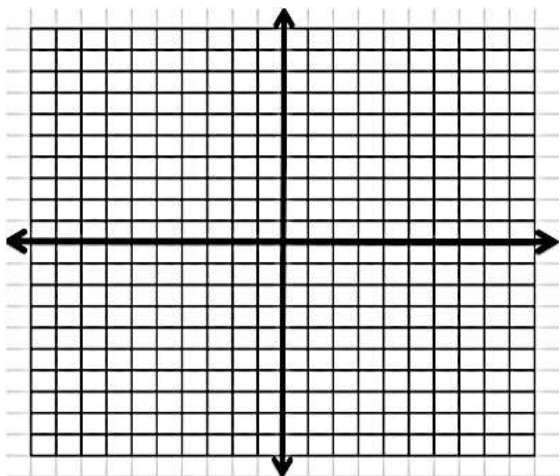
- a. Given a vertex at $(-5, 4)$ and x-intercepts at $x = -9$ and $x = -1$, graph the function with a maximum vertex.



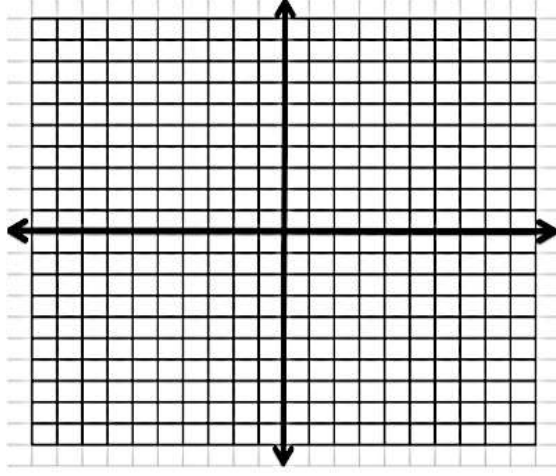
- b. Given a vertex at $(2, -6)$ and x-intercepts at $x = 6$ and $x = -2$, graph the function with a minimum vertex.



- c. Given a vertex at $(1, 7)$ and x-intercepts at $x = 5$ and $x = -4$, graph the function with a maximum vertex.



- d. Given a vertex at $(-5, -1)$ and x-intercepts at $x = -3$ and $x = -7$, graph the function with a minimum vertex.

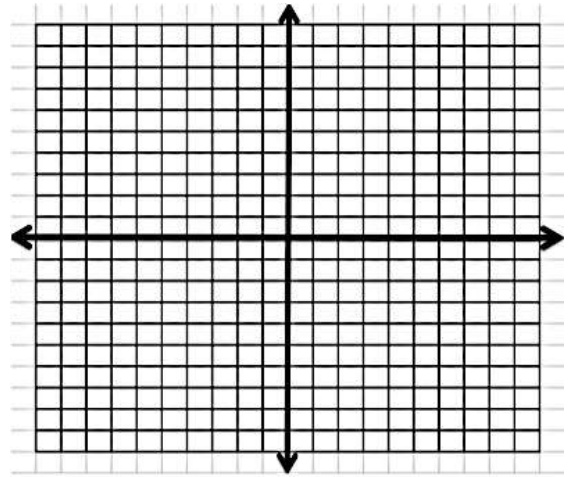


Level 3

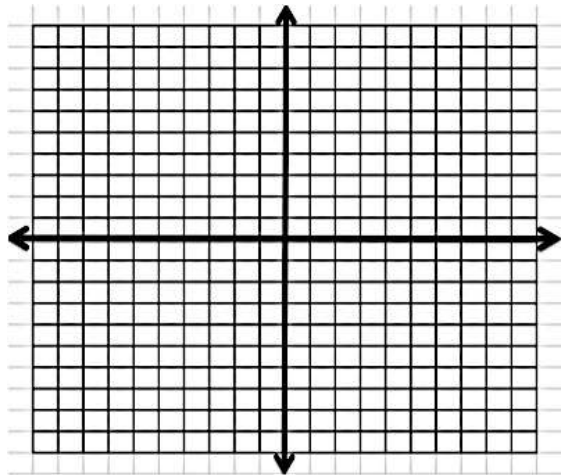
Watch (and take notes) the lecture called [Graphing Quadratic Equations](#).

2. Graph the quadratic equations.

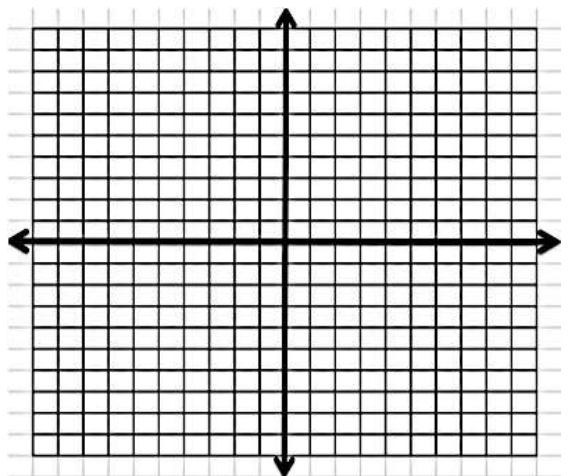
a. $y = x^2 + 6x + 8$



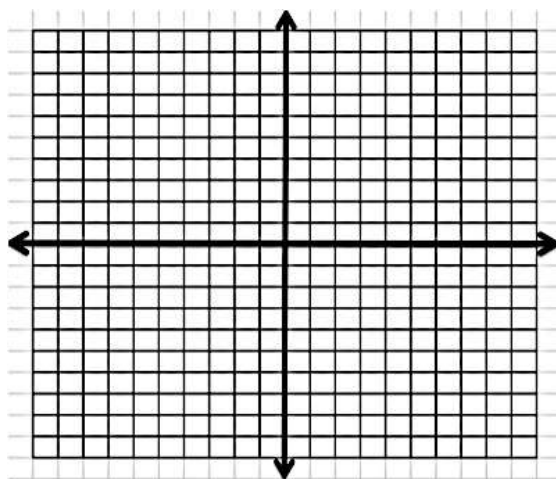
b. $y = -x^2 + 2x + 3$



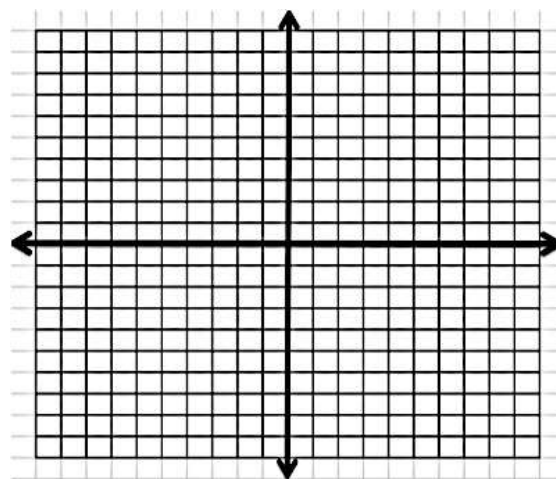
c. $y = x^2 - 4$



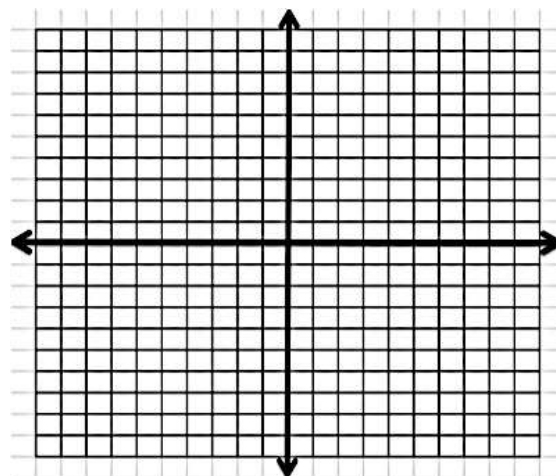
d. $y = -x^2 + 9$



e. $y = -2x^2 - 18x$



f. $y = 2x^2 + 4x - 6$



Level 4 (you don't need to complete level 4 questions to turn in this assignment).

3. Use the following quadratic equation to answer the questions below: $f(x) = x^2 + 7x + 12$.
- g. Find the x -intercepts
 - h. Find the vertex
 - i. The parabola then gets translated up by 4 and the equation becomes $g(x) = x^2 + 7x + 16$.
What do you notice about the equations?
 - j. What are the new x -intercepts?
 - k. Explain your answer from part d.

4. To the right is the graph of a cubic (an equation with degree 3). Find the equation that matches the graph. Show work and/or write sentences to explain how you got your answer.

