Section 7.4 (The Graph of the Quadratic Function)

In this section we will look at the graph of the quadratic function in a great bit of detail. We will also look at how the graph can help us to solve a quadratic equation.

The objectives for this section are to:

- Recognize the graph of a quadratic equation
- Find the vertex of the graph of a quadratic equation
- Find *x* and *y* intercepts of the graph of a quadratic equation
- Determine the axis of symmetry
- Solve a quadratic equation graphically

Determine if the graph in each of the following parabolas will open up or down. Indicate whether the vertex of the graph will be a maximum or a minimum point.

1. $y = 2x^2 + 8x - 1$

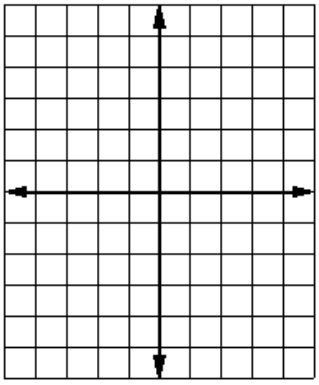
2. $y = 4x^2 - 6x$

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

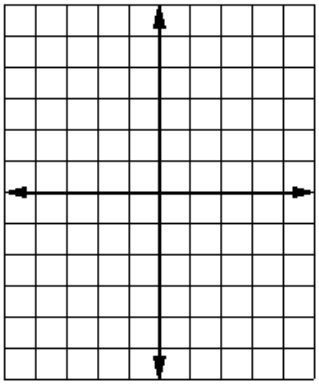
Graph each of the following parabolas by first finding the vertex and the y-intercept. If possible, check your solutions with a graphing calculator. The vertex of a parabola is found by calculating:

$$vertex(x\ value) \rightarrow \frac{-b}{2a}$$

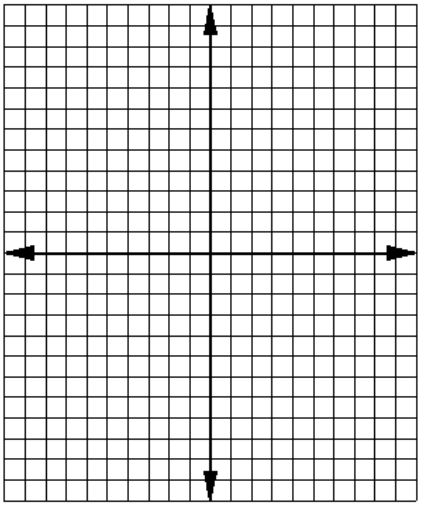
4. $y = x^2 - 4x$



5. $y = -x^2 - 4x - 3$



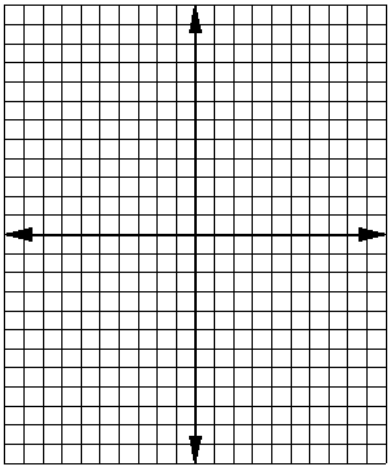
6. $y = 5x^2 - 10x + 7$



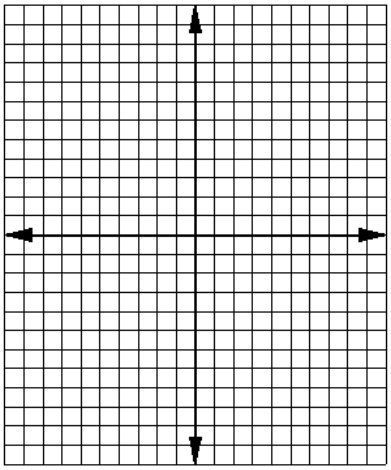
Section 7.4 (The Graph of the Quadratic Function)

Sketch a graph of each parabola by using the vertex and y- and x-intercepts. If possible, check your solutions with a graphing calculator.

7. $y = x^2 + 3x$



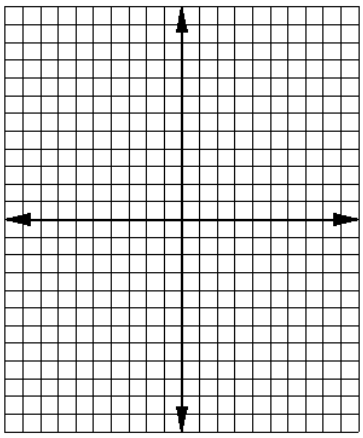
8. $y = 6x^2 - 5x - 6$



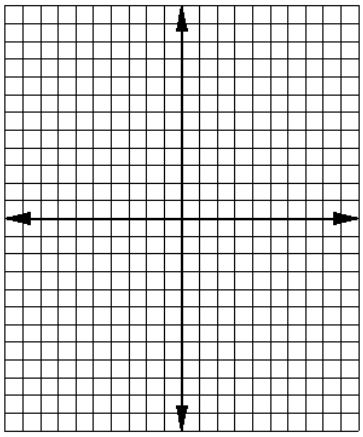
Section 7.4 (The Graph of the Quadratic Function)

Sketch a graph of each parabola by using the axis of symmetry and the y-intercept.

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



10. $y = -2x^2 - 2x - 6$



11. $y = -2x^2 - 5x$