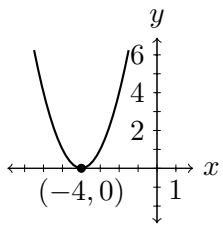
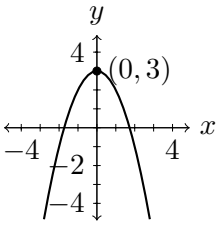
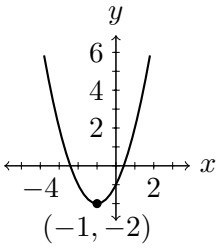
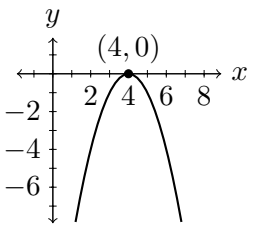
MAT 171 - CLASS NOTES - Section 3.1: Quadratic Functions and Models

1. Write the quadratic function to go with each graph below.









2. **Quadratic Function**

3. **Parabola**

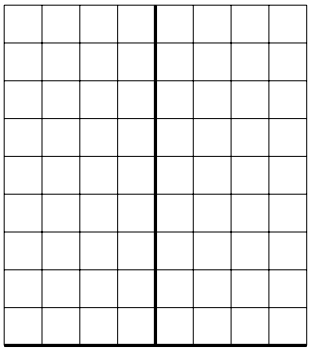
4. **Standard Form of a Quadratic Function**

   (a) Vertex

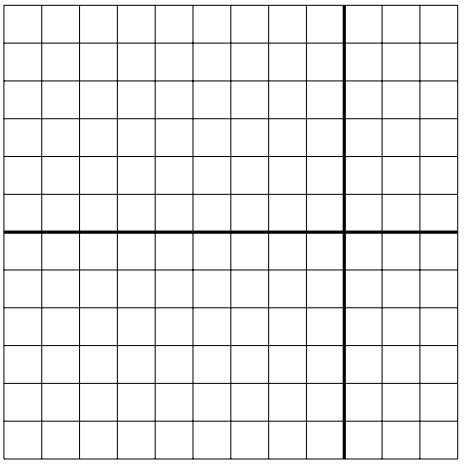
   (b) Axis of symmetry

5. Sketch the graph of the quadratic equation without using a graphing utility. Identify the vertex, axis of symmetry, x-intercept(s), and y-intercept.

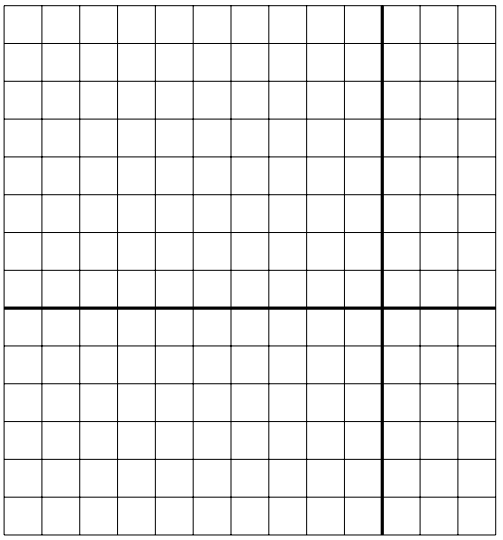
(a) $f(x) = x^2 + 2x + 1$



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



(c) $f(x) = x^2 + 10x + 14$



6. Determine whether the function below has a minimum or maximum value, and find where it occurs. Identify the function's domain and its range.

   $f(x) = -2x^2 - 12x + 3$