Graphing a Quadratic Function by Hand

These options allow one to graph any quadratic function. A quadratic function models many of the physical, business, and area problems one see in real world situation. For example: maximize height of a projectile; maximize profit or revenue; minimize cost; Maximize/ minimize area or volume

Option 1

1. Complete the square in x to write the quadratic function in the form f(x) = a(x - h)2 + k.
2. Graph the function in stages using transformations.

Option 2

1. Determine the vertex \((-b/2a, f(-b/2a))\).
2. Determine the axis of symmetry, \(x = -b/2a\)
3. Determine the y-intercept, \(f(0)\)
4. a) If the discriminant > 0, then the graph of the function has two x-intercepts, which are found by solving the equation. b) If the discriminant = 0, the vertex is the x-intercept. c) If the discriminant < 0, there are no x-intercepts.
5. Determine an additional point by using the y-intercept the axis of symmetry.
6. Plot the points and draw the graph.