Graphing Parabolas

3 ways

1. **Plotting Points - the Hard Way**

2. **In Vertex Form, $y = a(x - h)^2 + k$, Vertex (h, k)**

3. **In General Form, $y = ax^2 + bx + c$, Vertex (–b/2a, sub)**

Graphing Parabolas – Vertex Form

$y = a(x - h)^2 + k$, vertex (h, k)

Use the parent function, $y = x^2$,

1. From the parent function, move the vertex over *h* and up *k* units.
2. Pick a convenient point, zero if possible
3. Find another point by using symmetry.

Example Graph $y = 4(x - 1)^2 + 3$

1. New vertex (1, 3)
2. Let x = 0, then y = 7, (0, 7)
3. Use symmetry, 3rd point is (2, 7)

   From the vertex, we went over 1 to the left and up 4, so by using symmetry, we go over 1 to the right and up 4