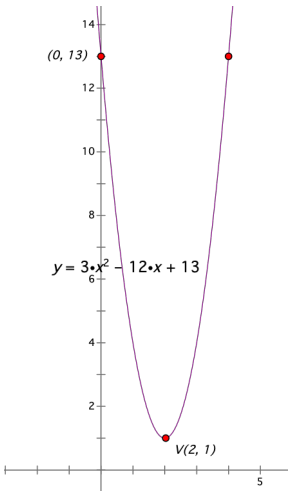
Graphing Parabolas – General Form: $y = ax^2 + bx + c$

Strategy – In the equation $y = ax^2 + bx + c$: find the vertex, pick a convenient point and symmetry to graph

1. **Find the value of $-b/2a$ to find x coordinate of vertex**
2. **Substitute the value of $-b/2a$ into the equation to find the y coordinate**
3. **Label the vertex**
4. **Pick a convenient point, 0 if possible**
5. **Use symmetry to find another point**

Example **Graph $y = 3x^2 - 12x + 13$**

1. **Using $\frac{-b}{2a} = \frac{-(-12)}{2(3)} = 2$**
2. **Substitute; $3(2)^2 - 12(2) + 13 = 1$**
3. **V(2, 1)**
4. **Let x = 0, then y = 13; (0, 13)**
5. **Use symmetry, 3rd point is (4, 13)**



Find the vertex, then graph

1. **$y = x^2 + 6x + 1$**

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

3. **$y = x^2 - 8x + 2$**

4. **$y = 2x^2 + 8x - 3$**

5. $y = 3x^2 - 12x + 4$

6. $y = -x^2 + 10x + 3$

7. $y = -3x^2 - 18x + 4$

8. $y = -5x^2 + 3$

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

10. $y = 2x^2 - 4x - 8$