Graphing Parabolas

Standard Form

$y = ax^2 + bx + c$

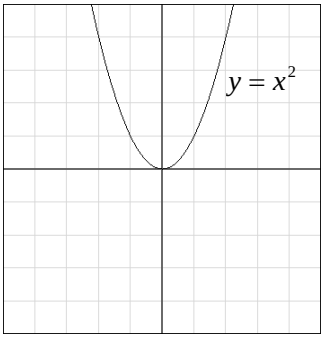
vertex: $x = -\dfrac{b}{2a}$

$y = f(x)$

axis of symmetry: $x = -\dfrac{b}{2a}$

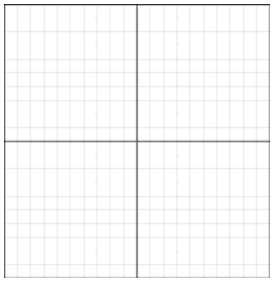
x-intercept: set y equal to zero and solve for x

y-intercept: set x equal to zero and solve for y

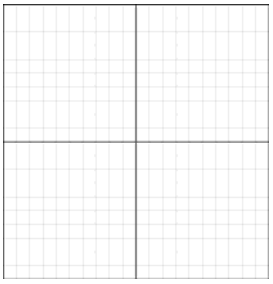


1. Find the vertex, axis of symmetry and intercepts of each function. Sketch the graph of each parabola.

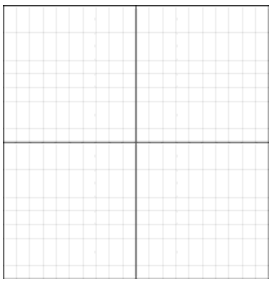
   a) $y = x^2 + 2x - 8$



b) $y = x^2 - 2x + 1$



c) $y = x^2 + 4$

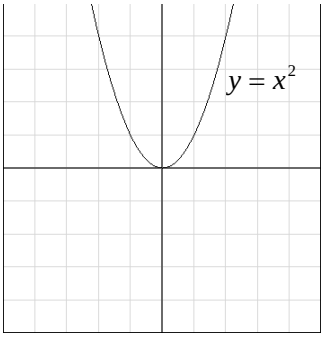


Vertex Form

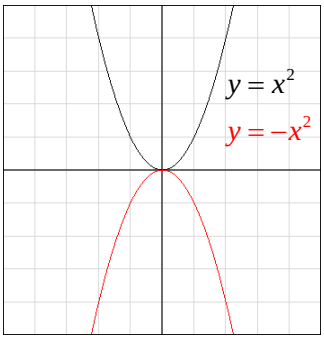
$y = a(x-h)^2 + k$

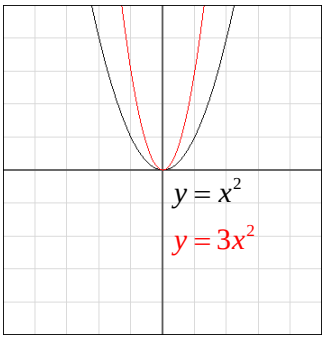
vertex: (h,k)

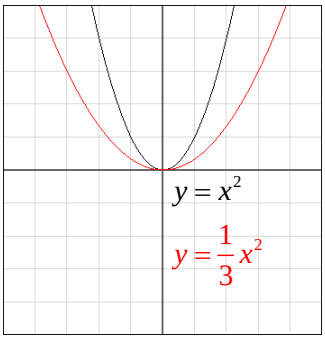
axis of symmetry: $x = h$

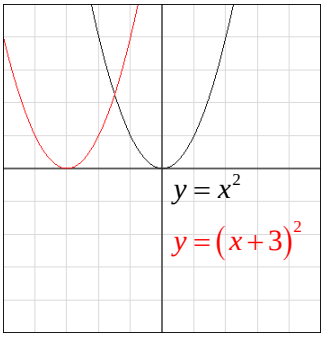


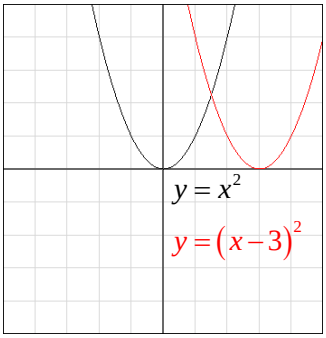
Transformations of $y = x^2$

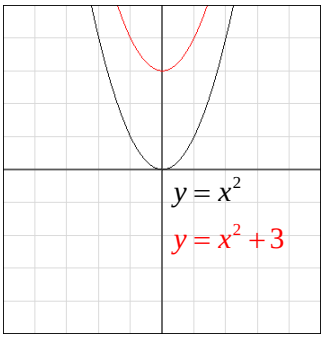


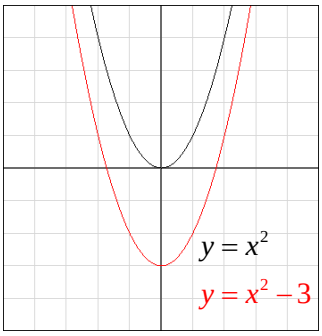








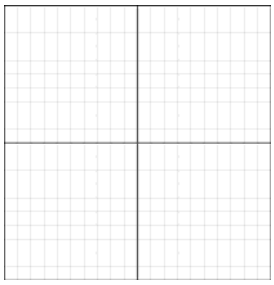


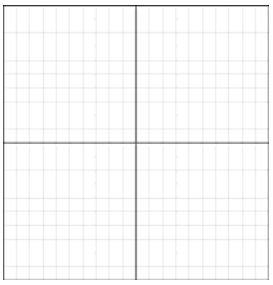


2. Find the vertex and axis of symmetry of each function. Sketch the graph of each parabola.

a) $y=(x-1)^2+5$

b) $y=-(x+2)^2$





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

d) $y=-\frac{1}{2}x^2+1$