

Quadratic Form

$$f(x) = ax^2 + bx + c$$



Completing the Square

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

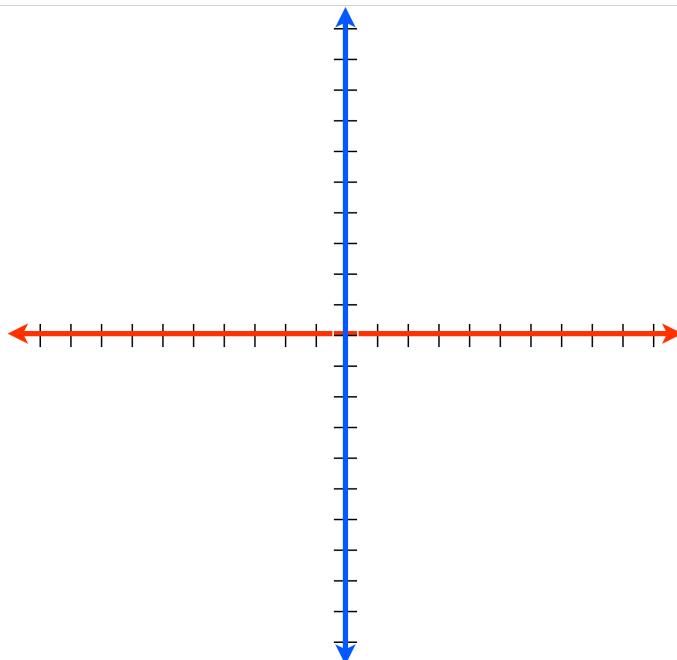
Vertex Form

Vertex Form

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

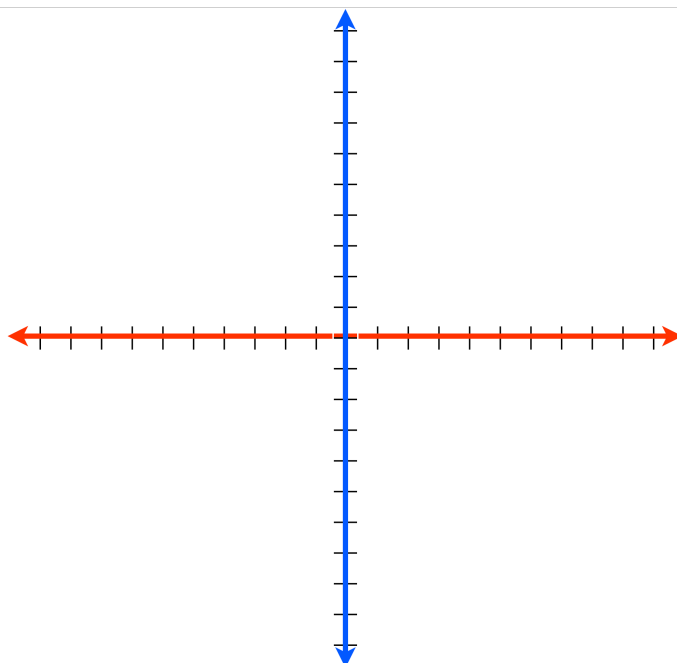
Graph the following quadratic function:

$$f(x) = x^2 + 6x + 10$$



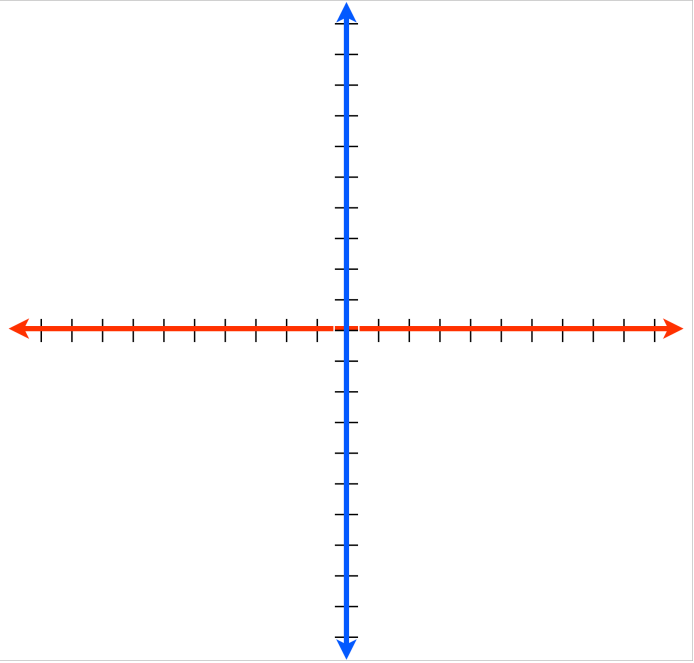
Graph the following quadratic function:

$$f(x) = x^2 - 10x + 22$$



Graph the following quadratic function:

$$f(x) = 2x^2 + 8x + 10$$



### Vertex Form

if  $a > 0$ , parabola opens up  
if  $a < 0$ , parabola opens down

$h$  give the horizontal translation  
(right and left)

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

if  $|a| > 1$ , parabola becomes more narrow  
if  $0 < |a| < 1$ , parabola becomes more wide

$k$  give the vertical translation  
(up and down)