

# Plotting the Parabola

How to plot :  $w(q) = a q^2 + b q + c$

## Step 1.

Examine the sign for the leading coefficient

If  $a > 0$  then the valley shape:

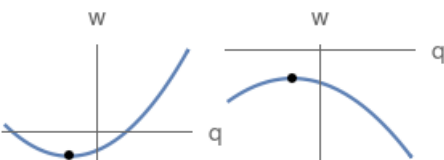


If  $a < 0$  then the hill shape:



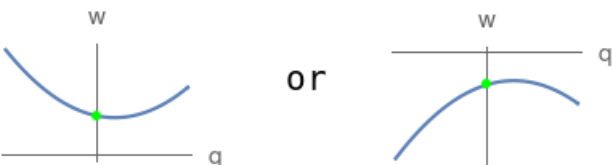
## Step 2.

Compute the vertex:  $(-\frac{b}{2a}, w(-\frac{b}{2a}))$



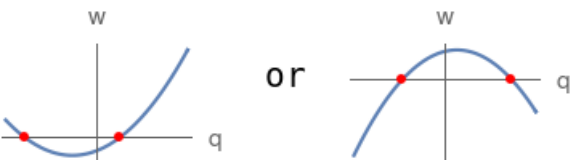
## Step 3.

Compute the w-intercept by setting  $q=0$ ,  $0^2 a + 0 b + c = c$



## Step 4.

Compute the q-intercepts by solving:  $a q^2 + b q + c = 0$



## Step 5.

Sketch a rough plot, try to connect vertex to intercepts:

