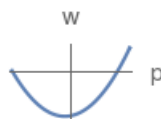# Plotting the Parabola

How to plot : $w(p) = a\,p^2 + b\,p + c$

Step 1.
Examine the sign for the leading coefficent

If a > 0 then the valley shape:
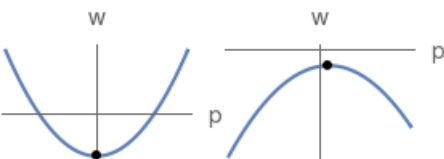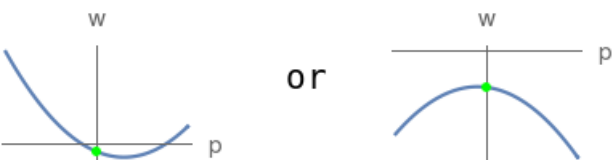
If a < 0 then the hill shape:

Step 2.
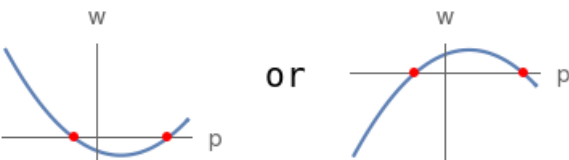Compute the vertex: $\left(-\dfrac{b}{2a}, w\left(-\dfrac{b}{2a}\right)\right)$

Step 3.
Compute the w–intercept by setting p=0, $0^2\,a + 0\,b + c = c$

or

Step 4.
Compute the p–intercepts by solving: $a\,p^2 + b\,p + c = 0$

or

Step 5.
Sketch a rough plot, try to connect vertex to intercepts:

or