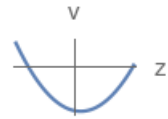
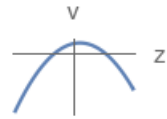
Plotting the Parabola

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

Step 1.

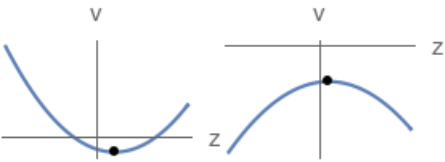
Examine the sign for the leading coefficent

If $a > 0$ then the valley shape: 

If $a < 0$ then the hill shape: 

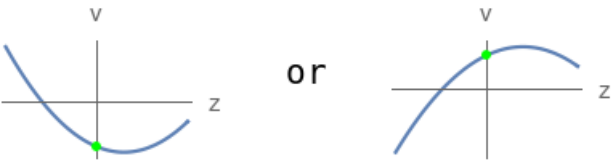
Step 2.

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



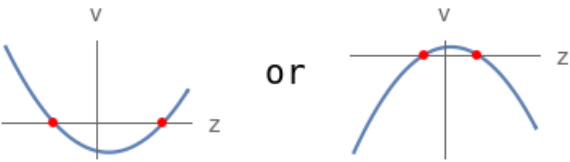
Step 3.

Compute the v-intercept by setting $z=0$, $0^2\,a + 0\,b + c = c$



Step 4.

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



Step 5.

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