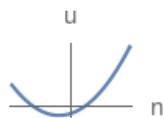# Plotting the Parabola

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

Step 1.

Examine the sign for the leading coefficent

If $a > 0$ then the valley shape:
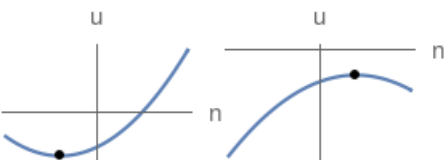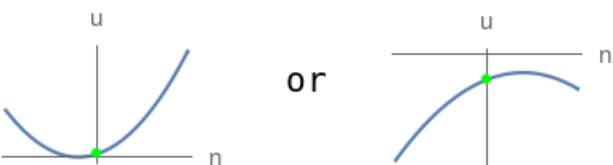

If $a < 0$ then the hill shape:

Step 2.

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

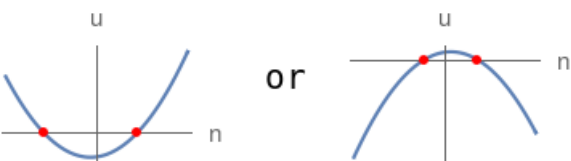**Step 3.**

Compute the u–intercept by setting $n=0$, $0^2 a + 0\,b + c = c$

Step 4.

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

Step 5.

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