

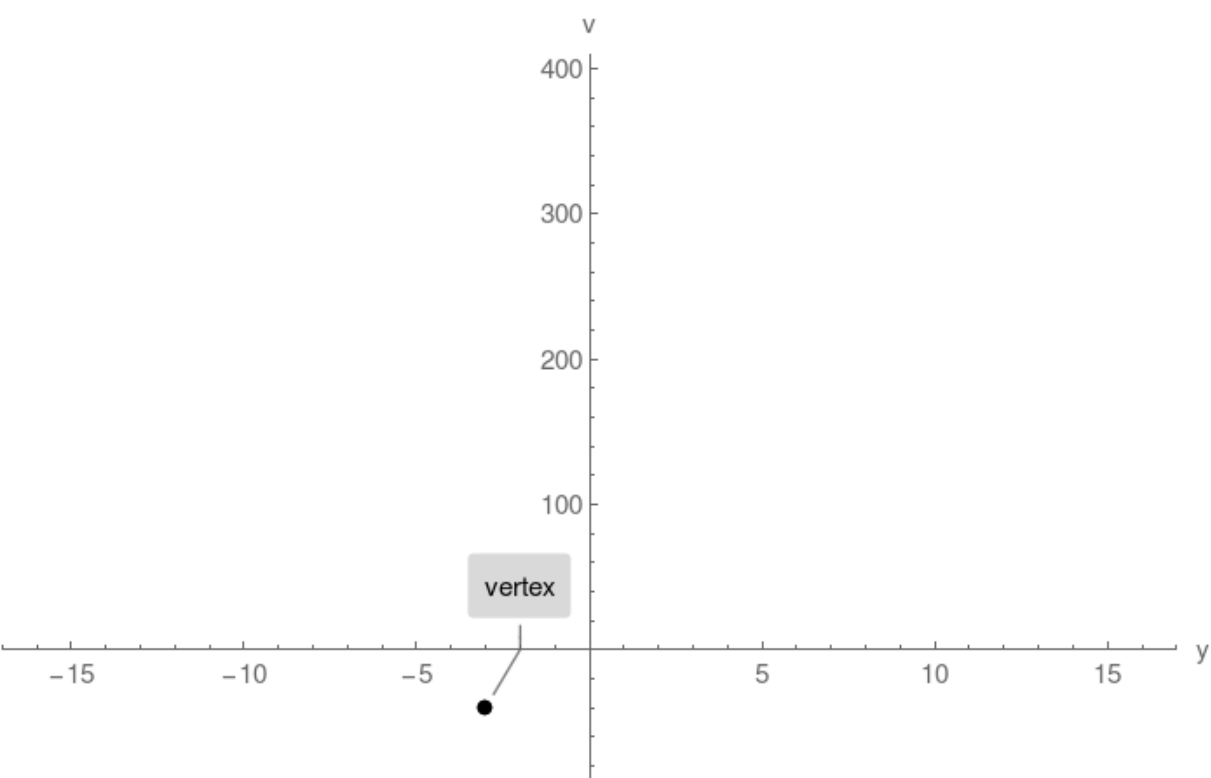
Example 1. 2 horizontal intercepts found

Plot $v(y) = y^2 + 6y - 31$

Step 1.

Compute vertex and plot single point:

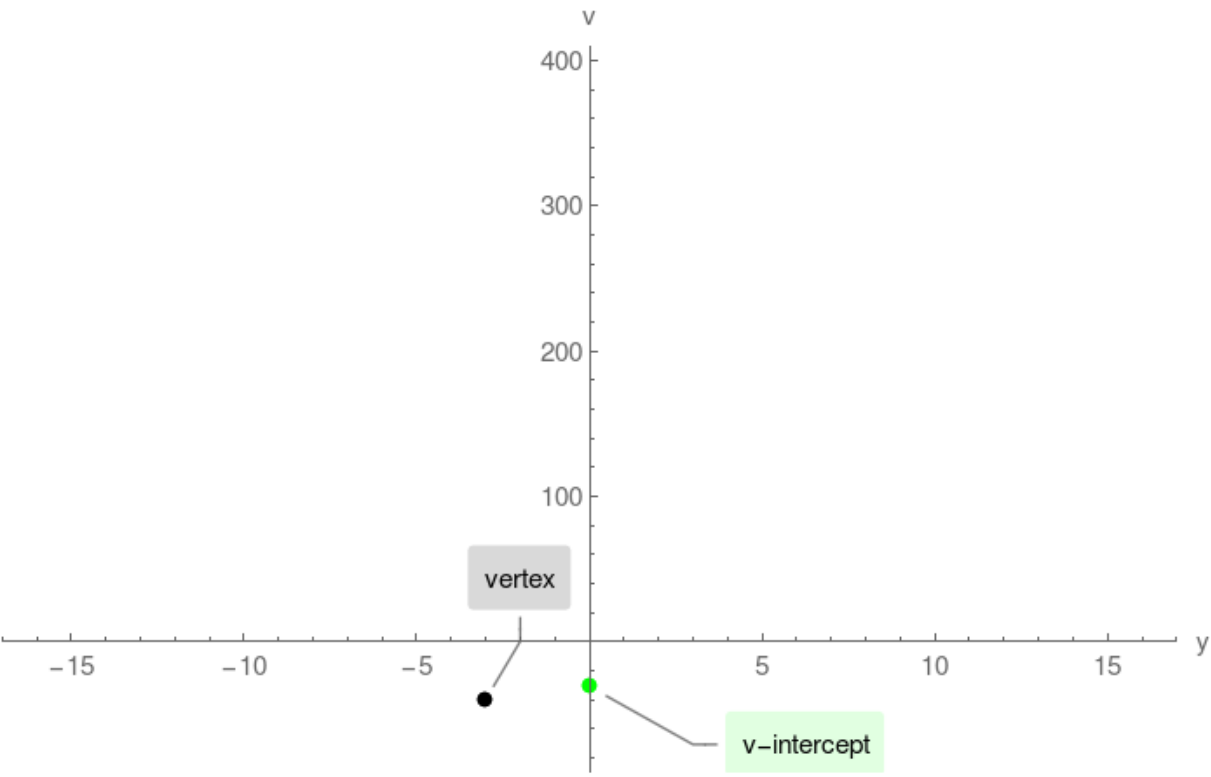
vertex = $(-3, -40)$



Step 2.

Compute v-intercept and plot single point:

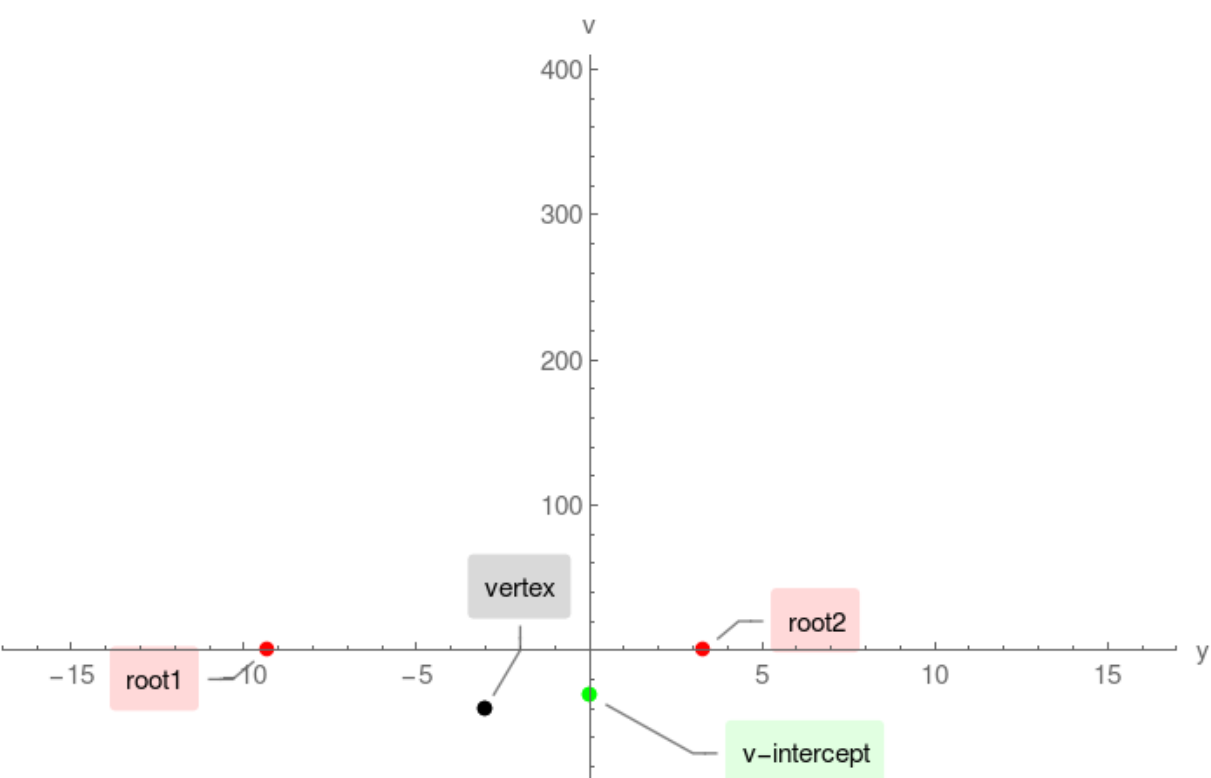
v-intercept = $(0, -31)$



Step 3.

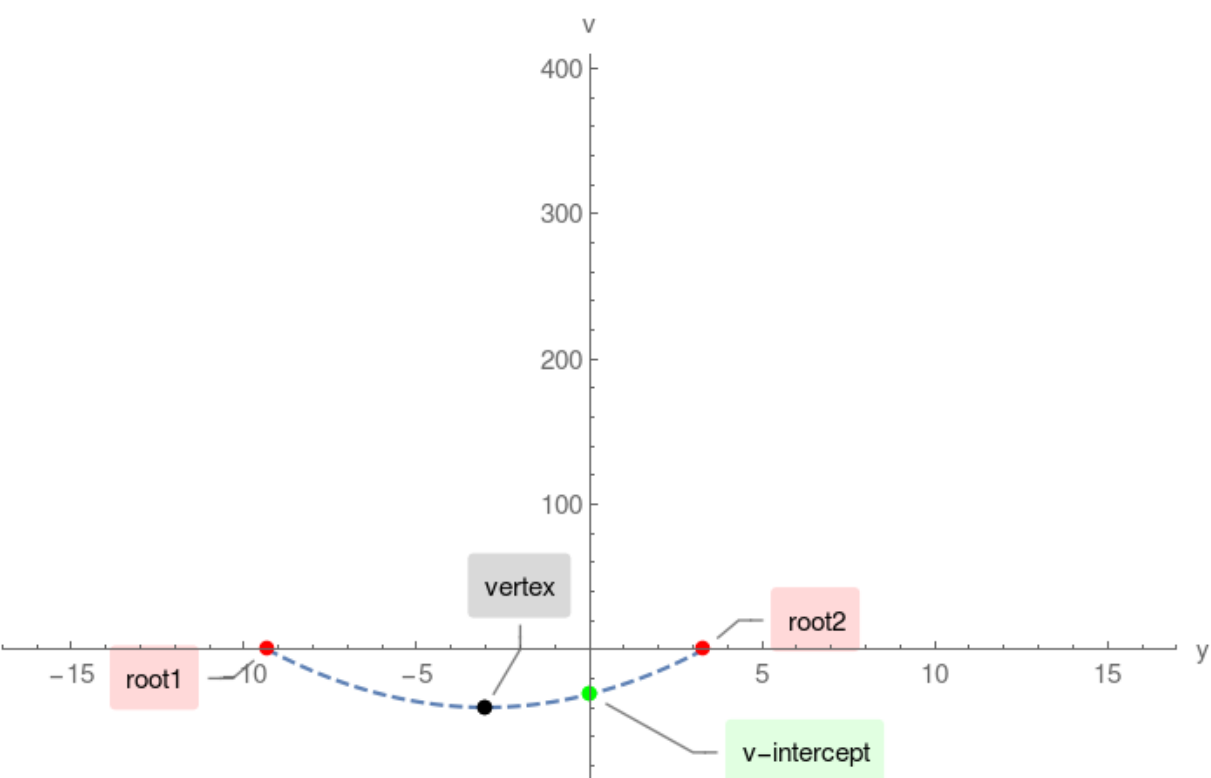
Compute y-intercepts by solving $y^2 + 6y - 31 = 0$:

$(-3 - 2\sqrt{10}, 0)$, $(-3 + 2\sqrt{10}, 0)$



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts

