

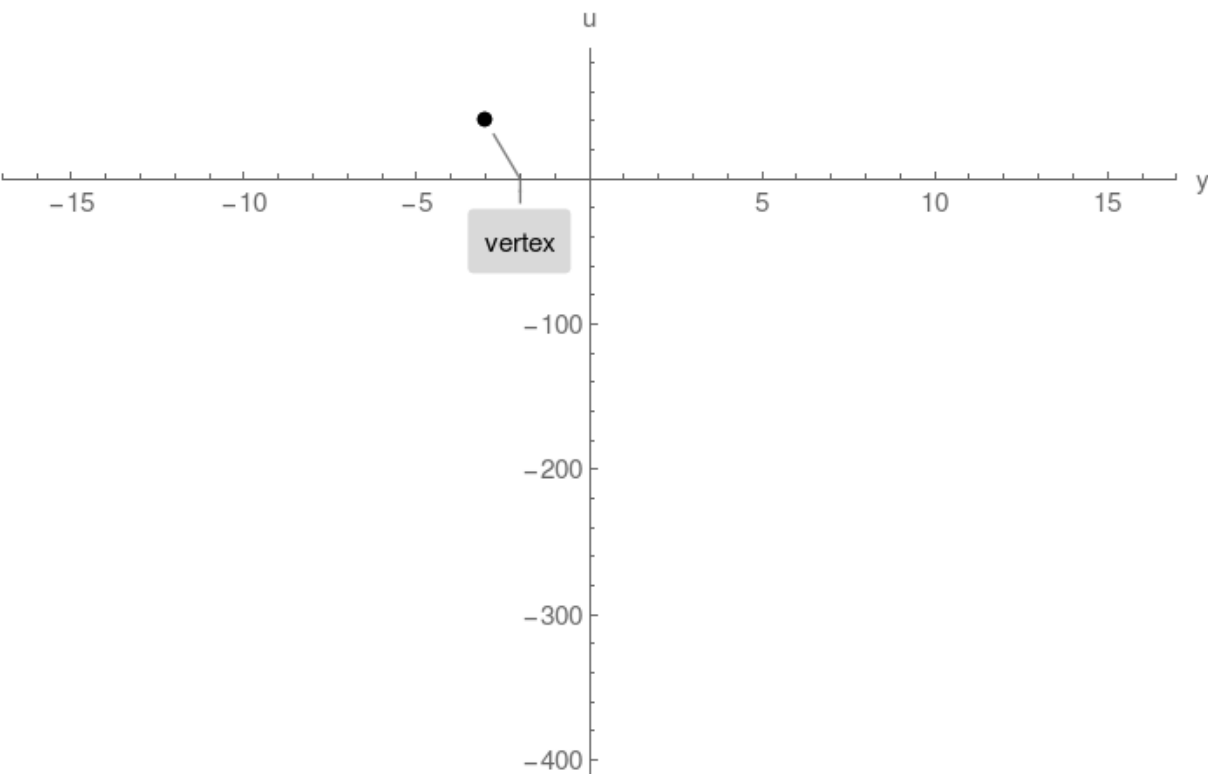
Example 1. 2 horizontal intercepts found

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

Step 1.

Compute vertex and plot single point:

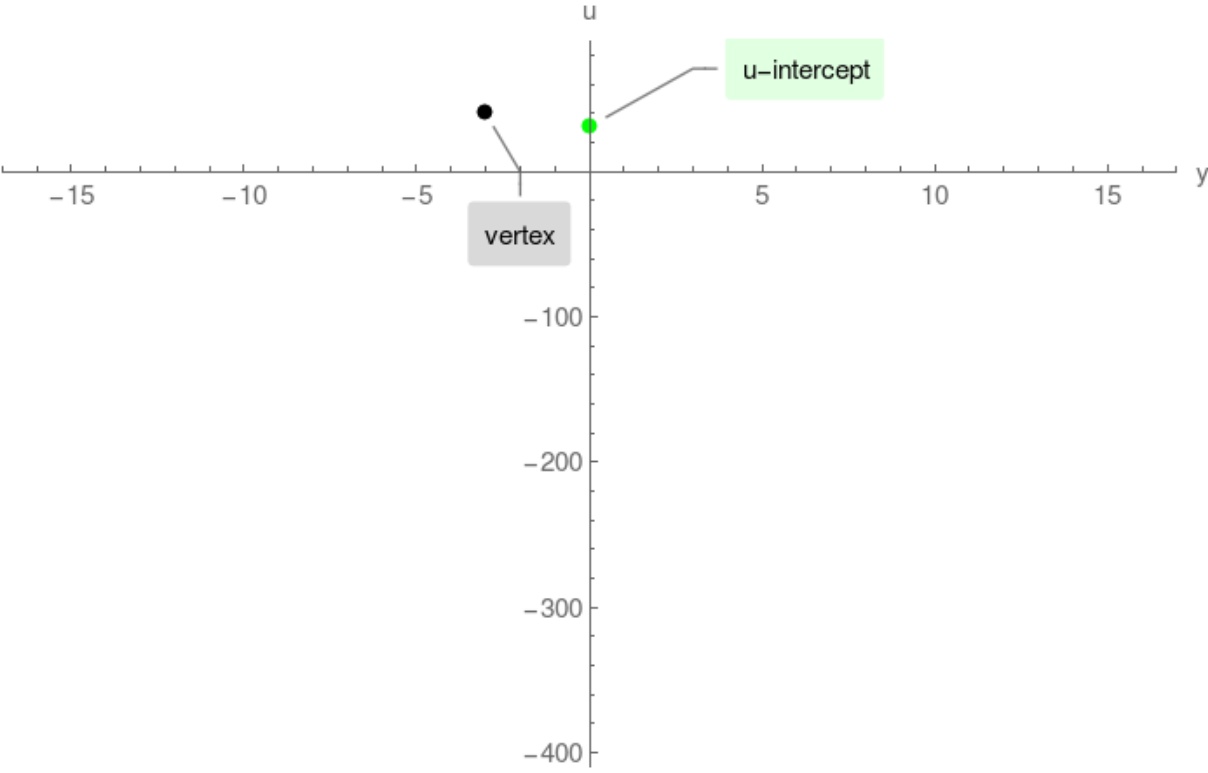
vertex = $(-3, 40)$



Step 2.

Compute u-intercept and plot single point:

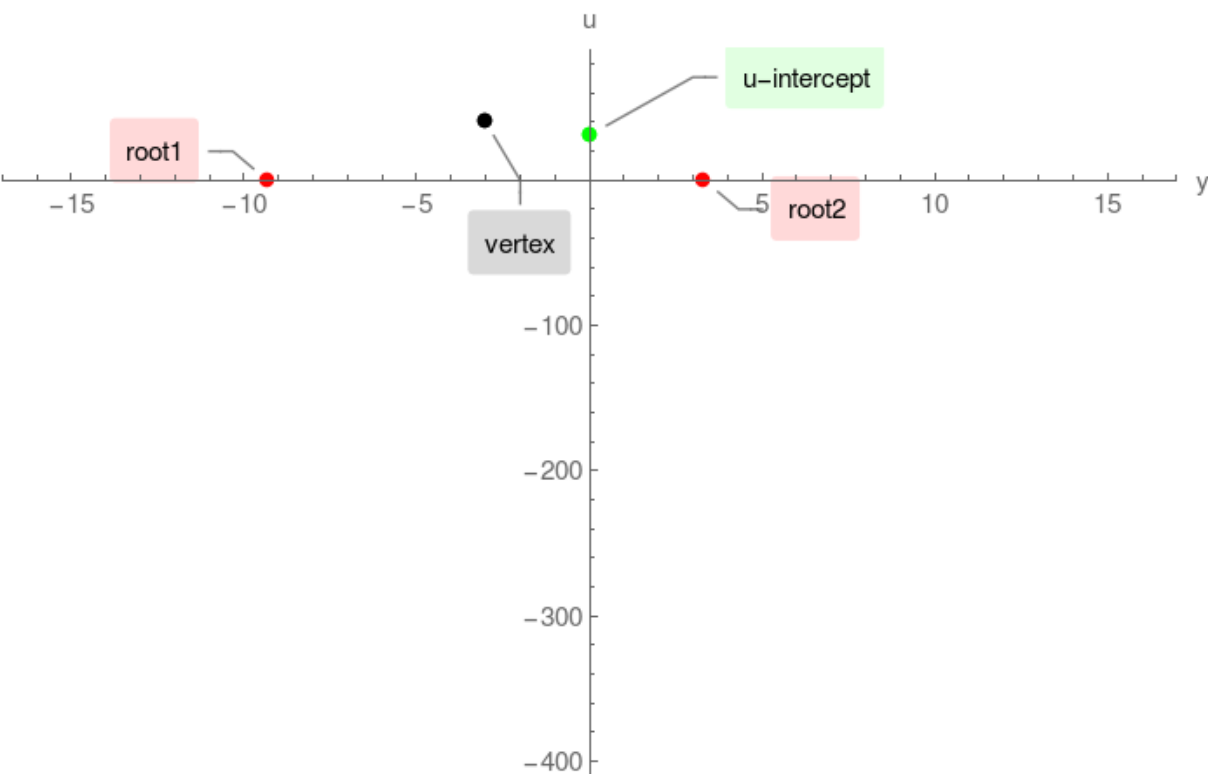
u-intercept = $(0, 31)$



Step 3.

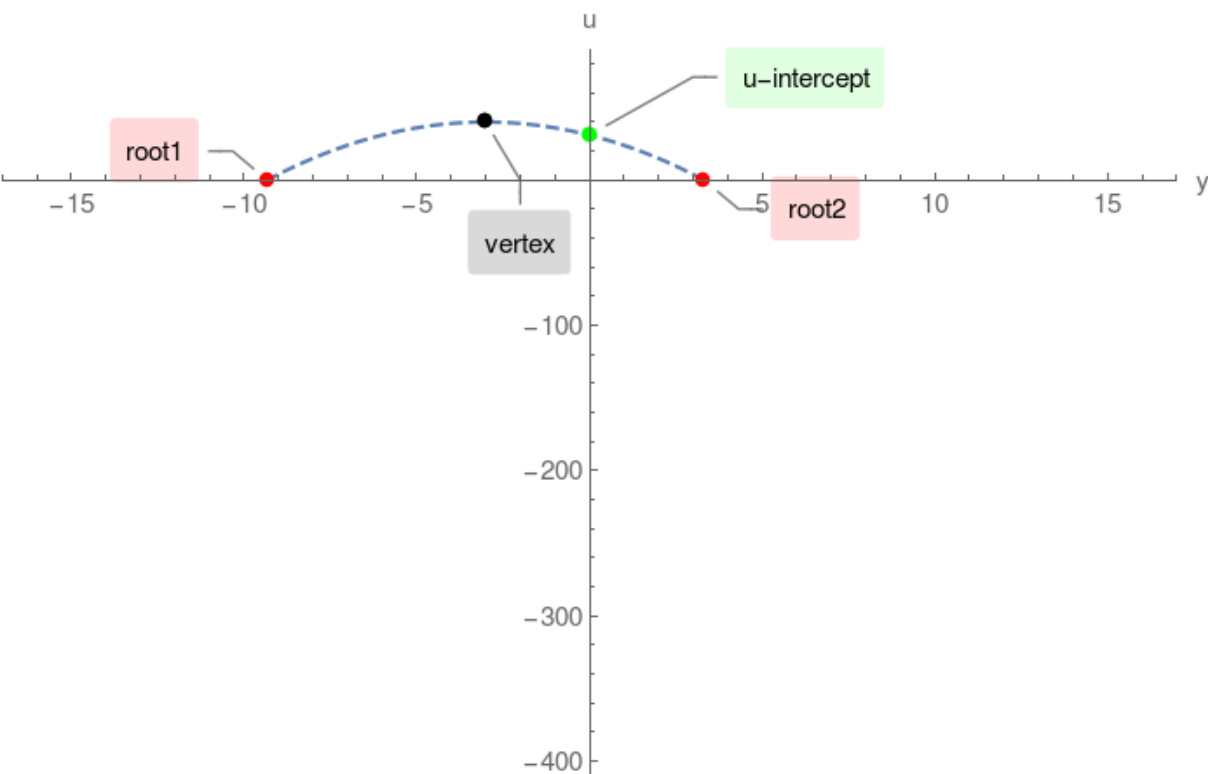
Compute y-intercepts by solving $-y^2 - 6y + 31 = 0$:

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



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts

