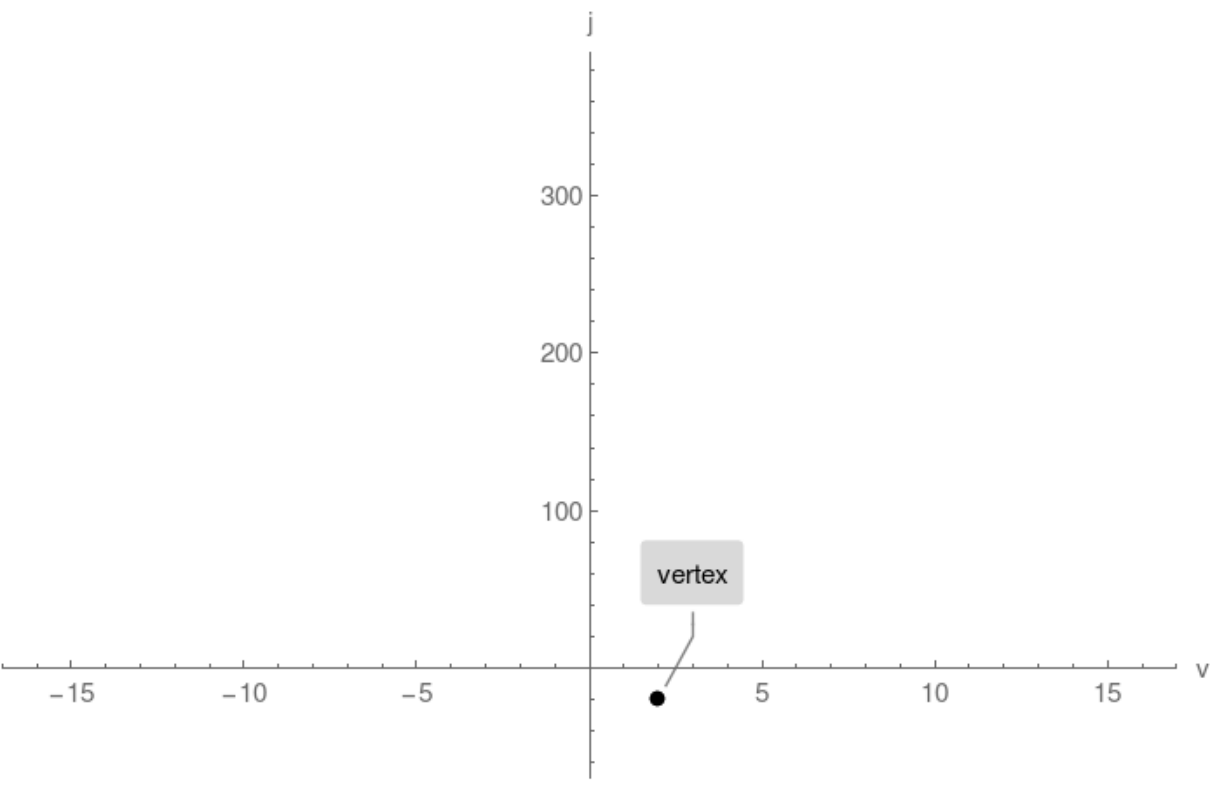
Example 1. 2 horizontal intercepts found

Plot $j(v) = v^2 - 4v - 16$

Step 1.

Compute vertex and plot single point:

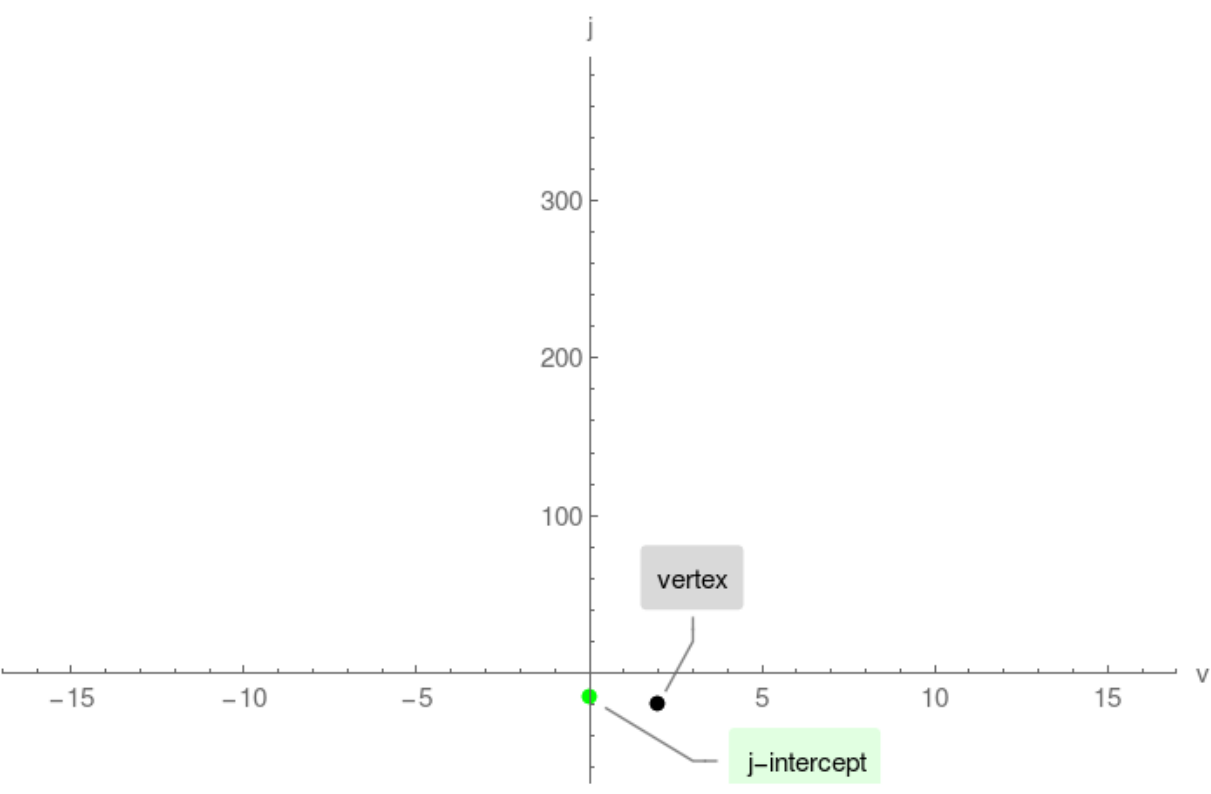
vertex $= (2, -20)$



Step 2.

Compute j-intercept and plot single point:

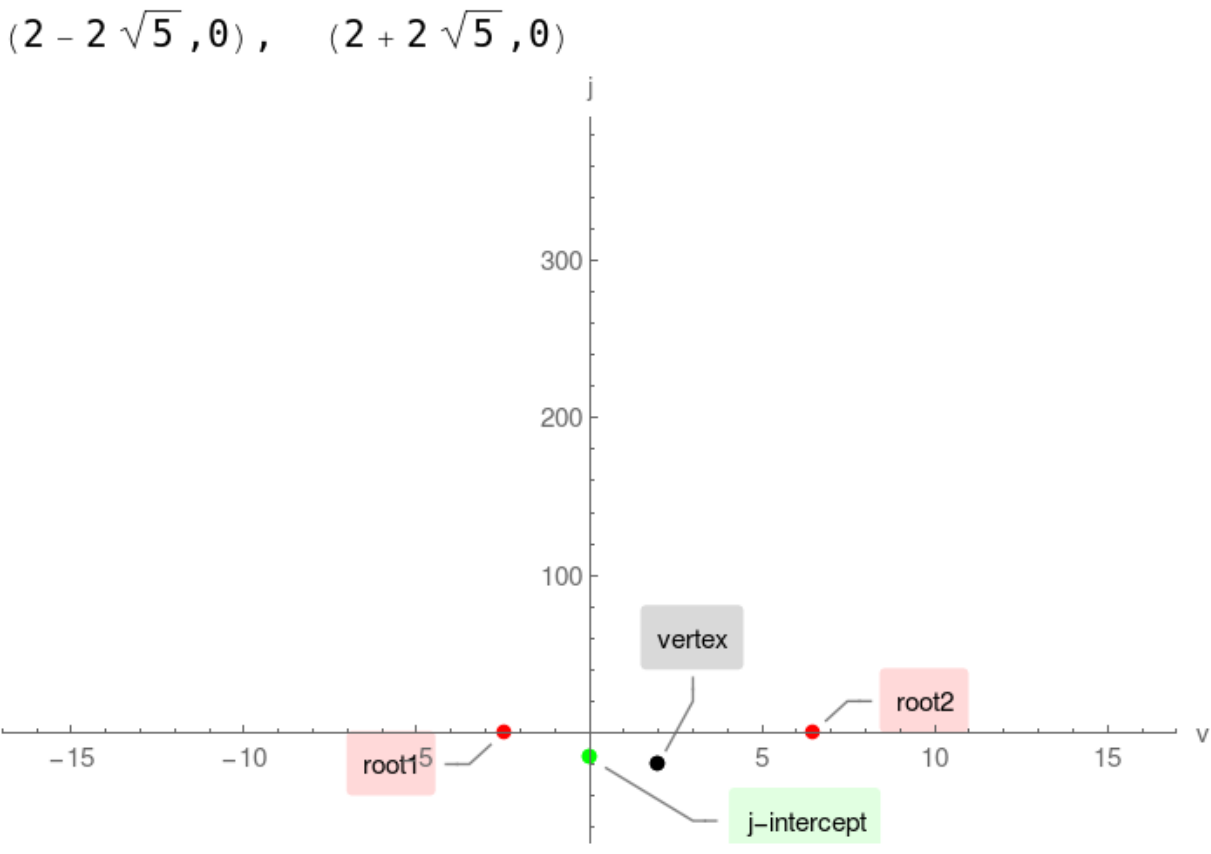
j-intercept $= (0, -16)$



Step 3.

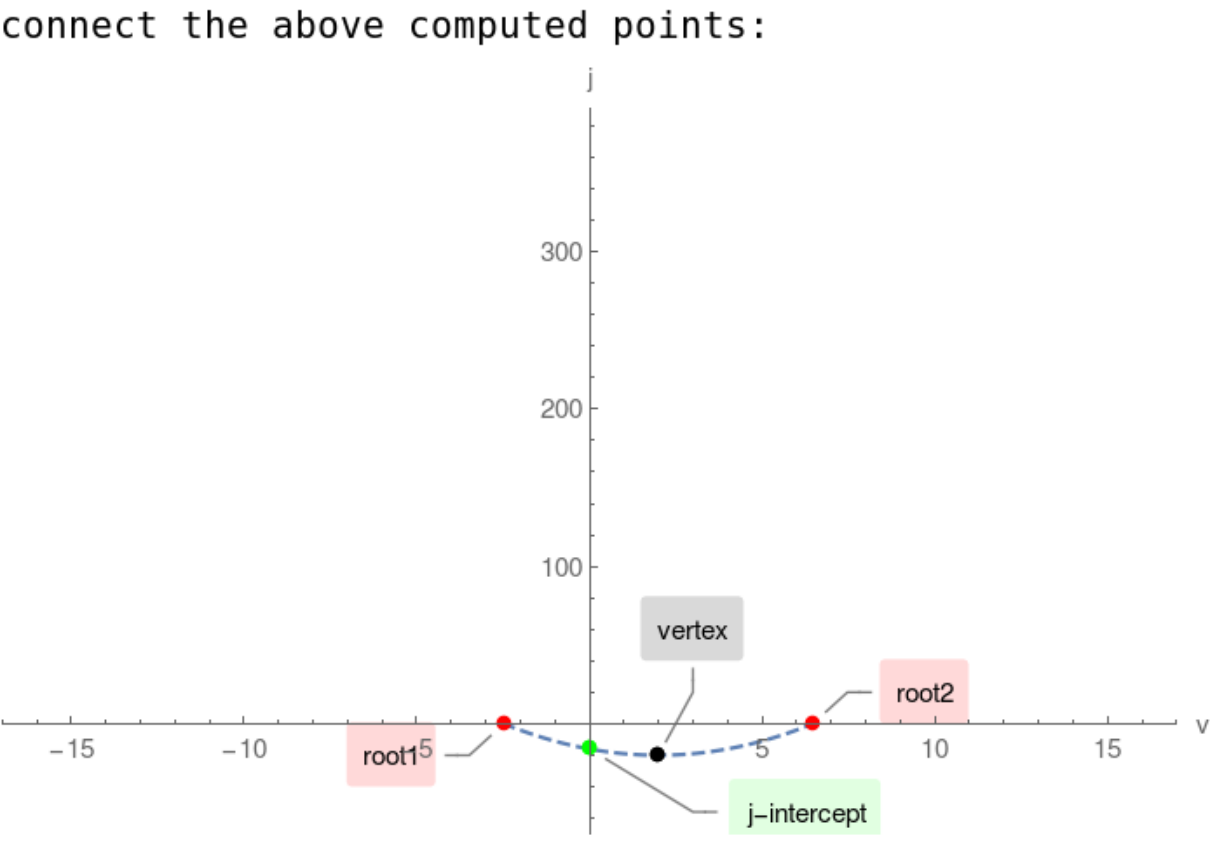
Compute v-intercepts by solving $v^2 - 4v - 16 = 0$:

$(2 - 2\sqrt{5}, 0)$, $(2 + 2\sqrt{5}, 0)$



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts