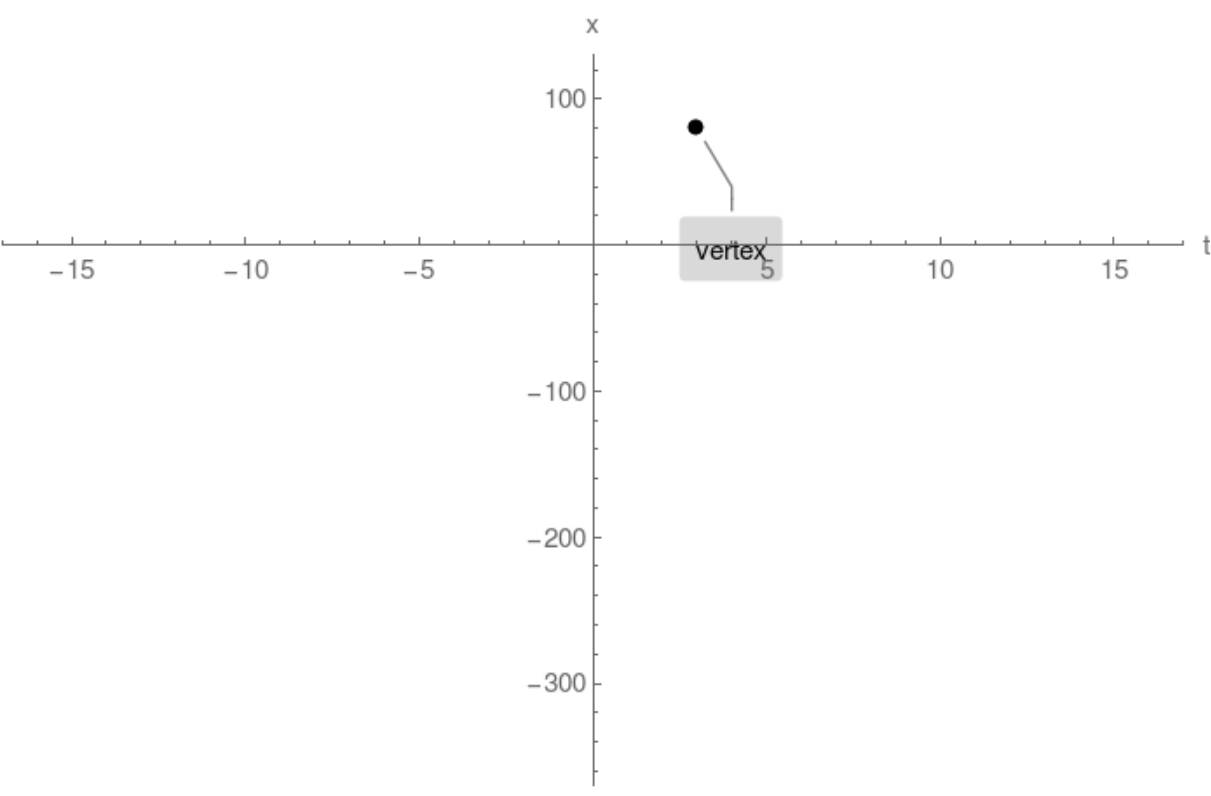
Example 1. 2 horizontal intercepts found

Plot $x(t) = -t^2 + 6t + 71$

Step 1.

Compute vertex and plot single point:

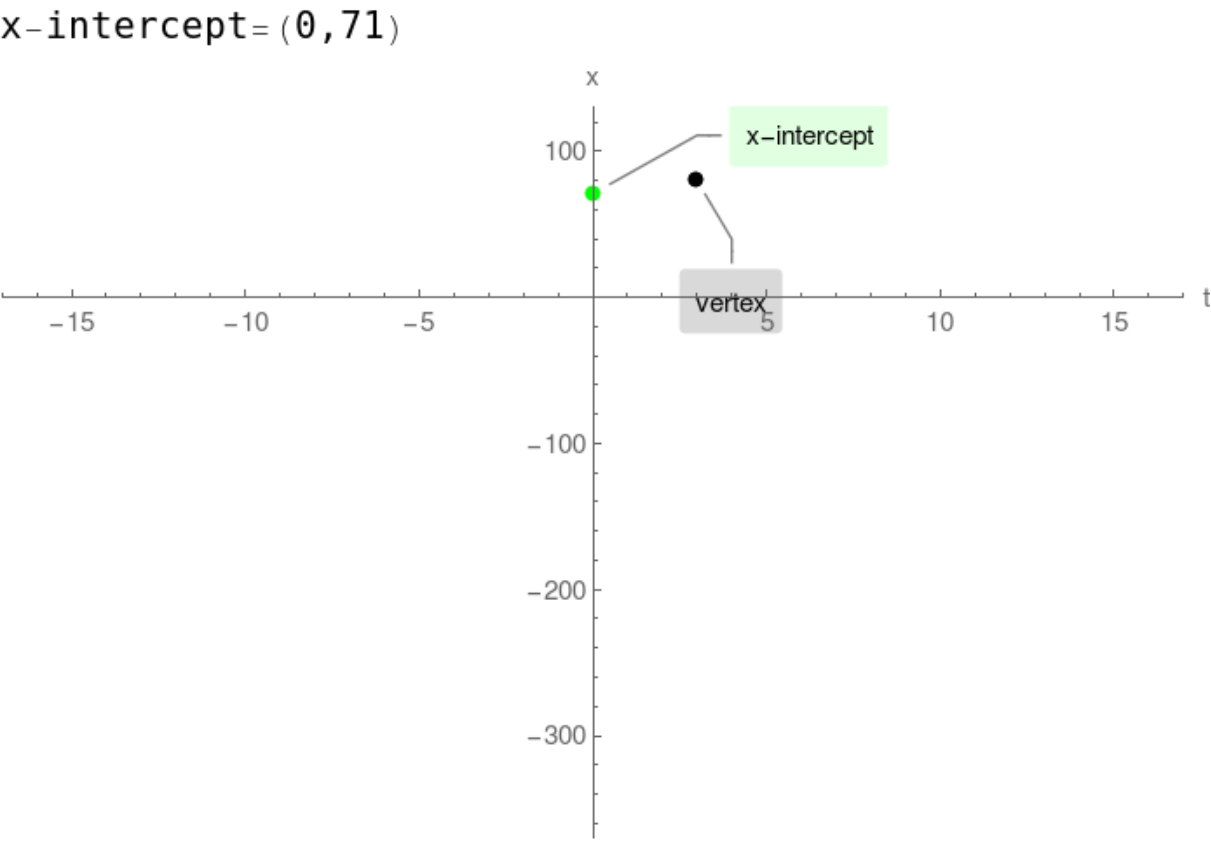
vertex $= (3, 80)$



Step 2.

Compute x-intercept and plot single point:

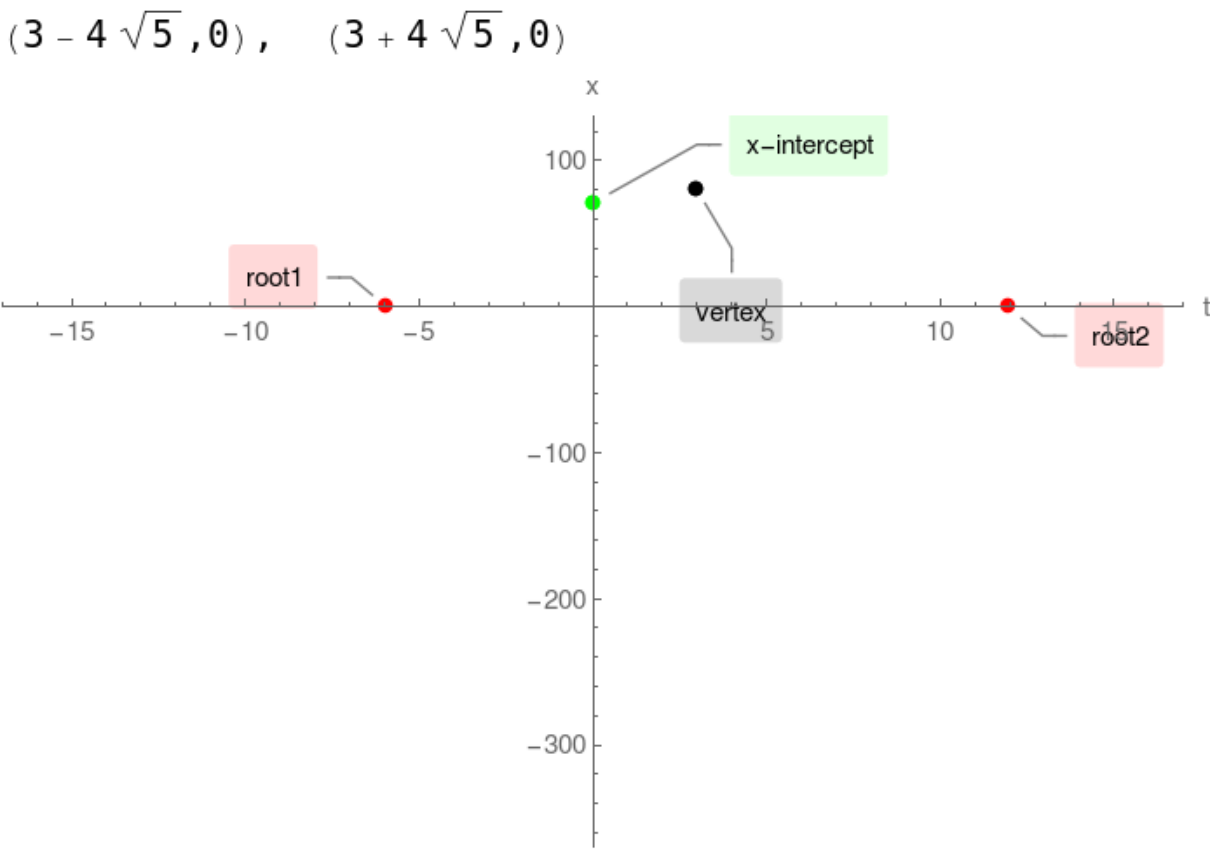
x-intercept $= (0, 71)$



Step 3.

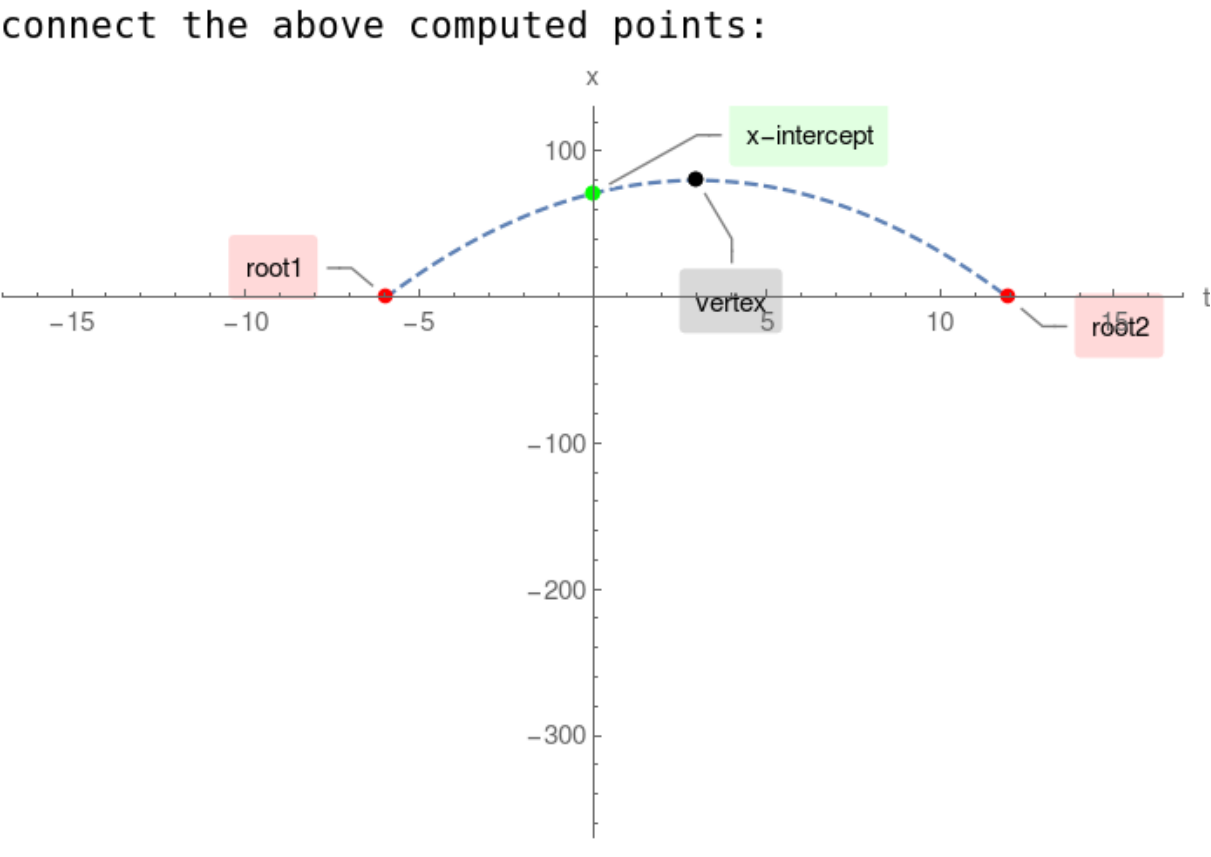
Compute t-intercepts by solving $-t^2 + 6t + 71 = 0$:

$(3 - 4\sqrt{5}, 0)$, $(3 + 4\sqrt{5}, 0)$



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts