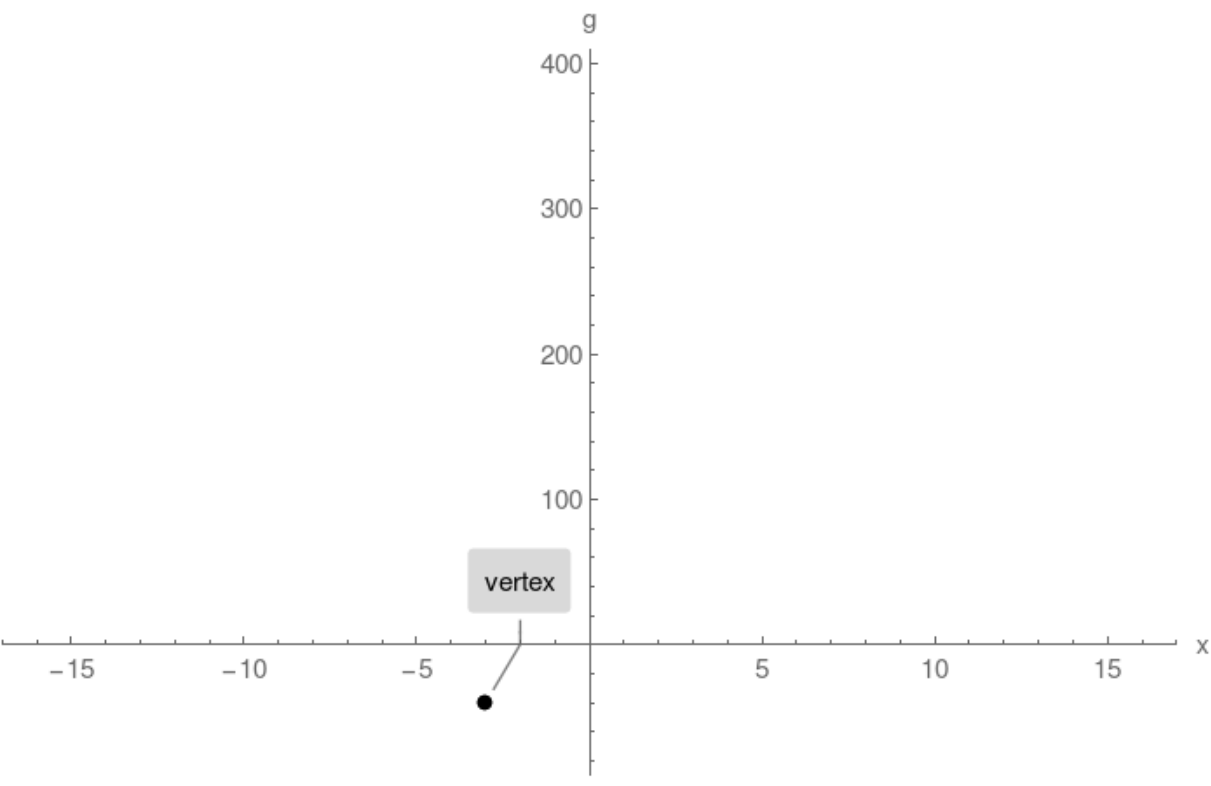
Example 1. 2 horizontal intercepts found

Plot $g(x)=x^2+6x-31$

Step 1.

Compute vertex and plot single point:

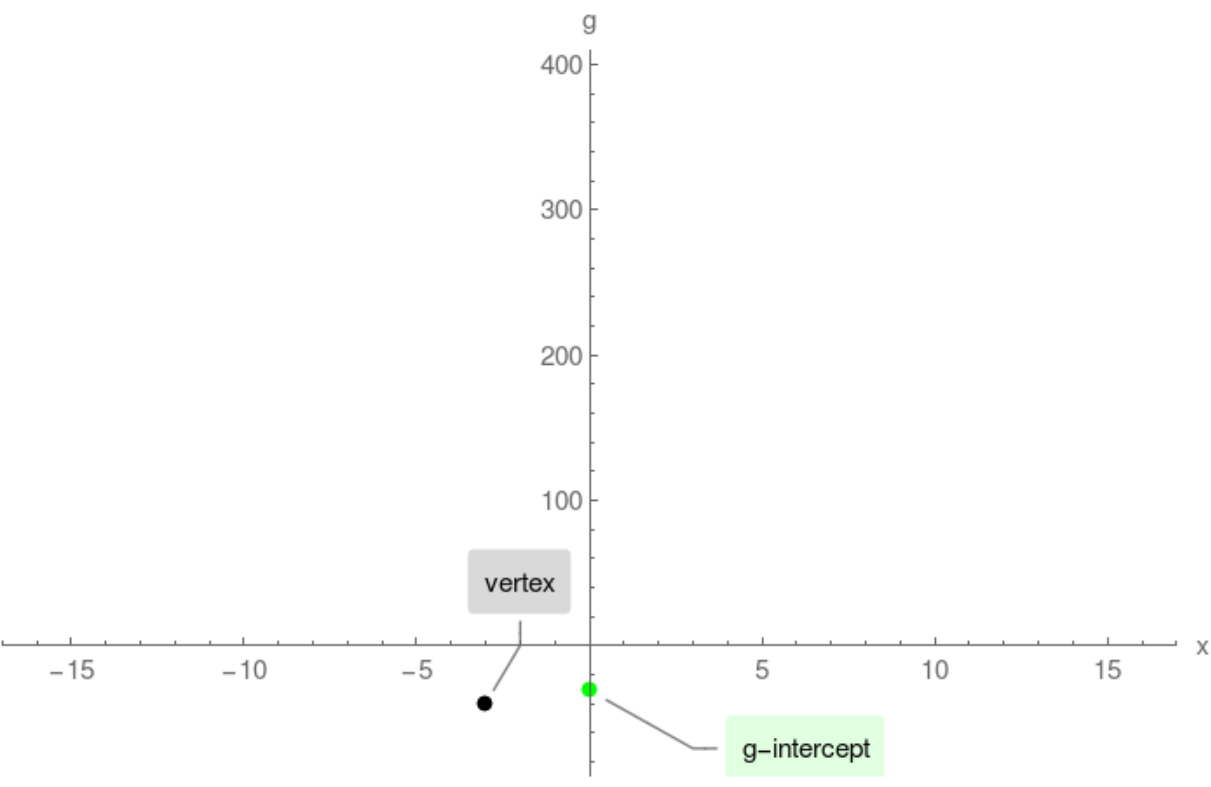
vertex$=(-3,-40)$



Step 2.

Compute g-intercept and plot single point:

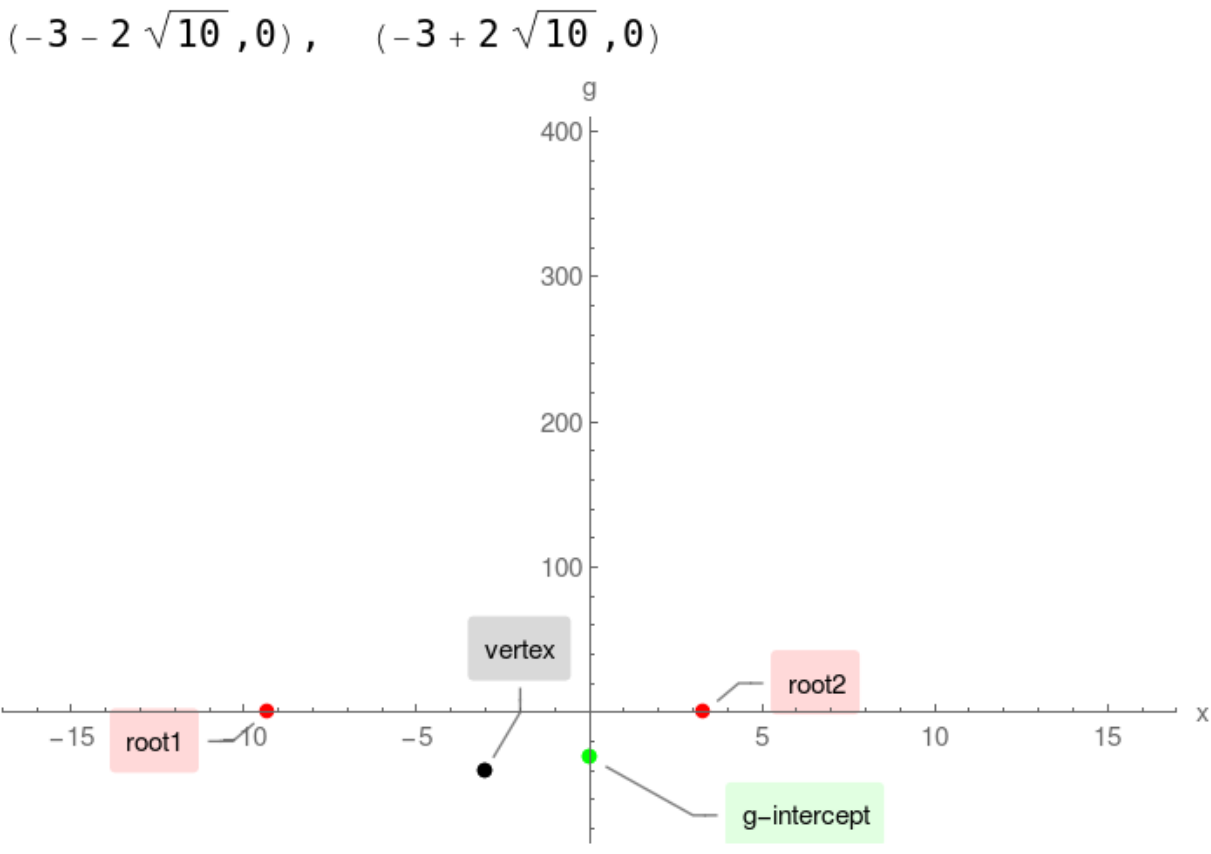
g-intercept$=(0,-31)$



Step 3.

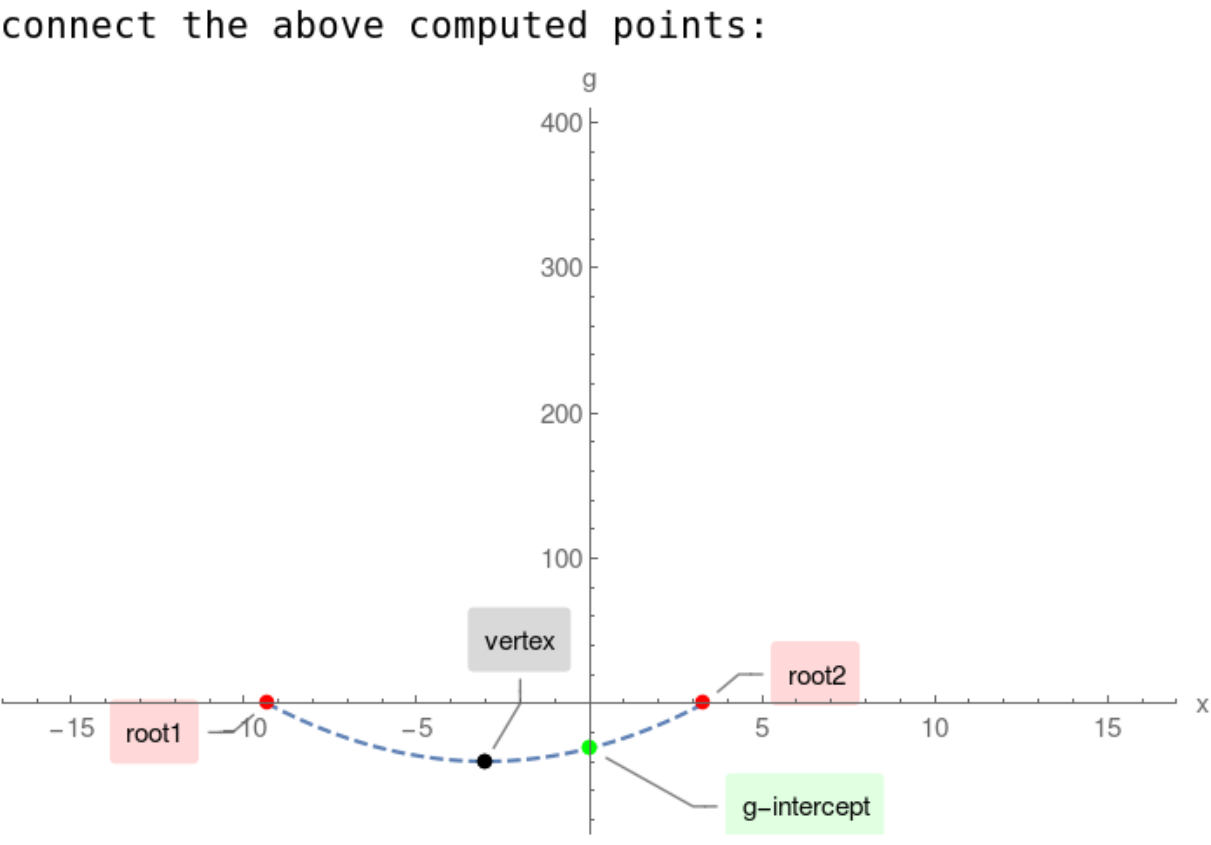
Compute x-intercepts by solving $x^2+6x-31=0$:

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



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts