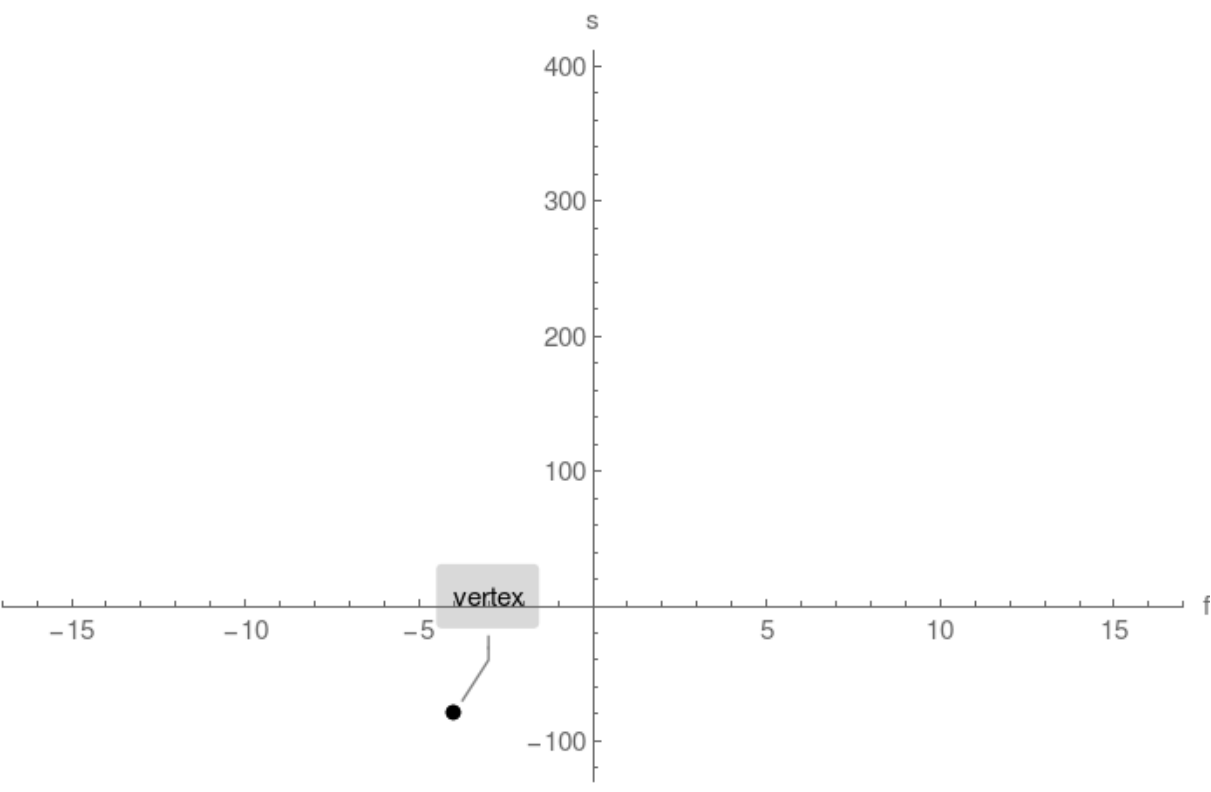
Example 1. 2 horizontal intercepts found

Plot $s(f) = f^2 + 8f - 64$

Step 1.

Compute vertex and plot single point:

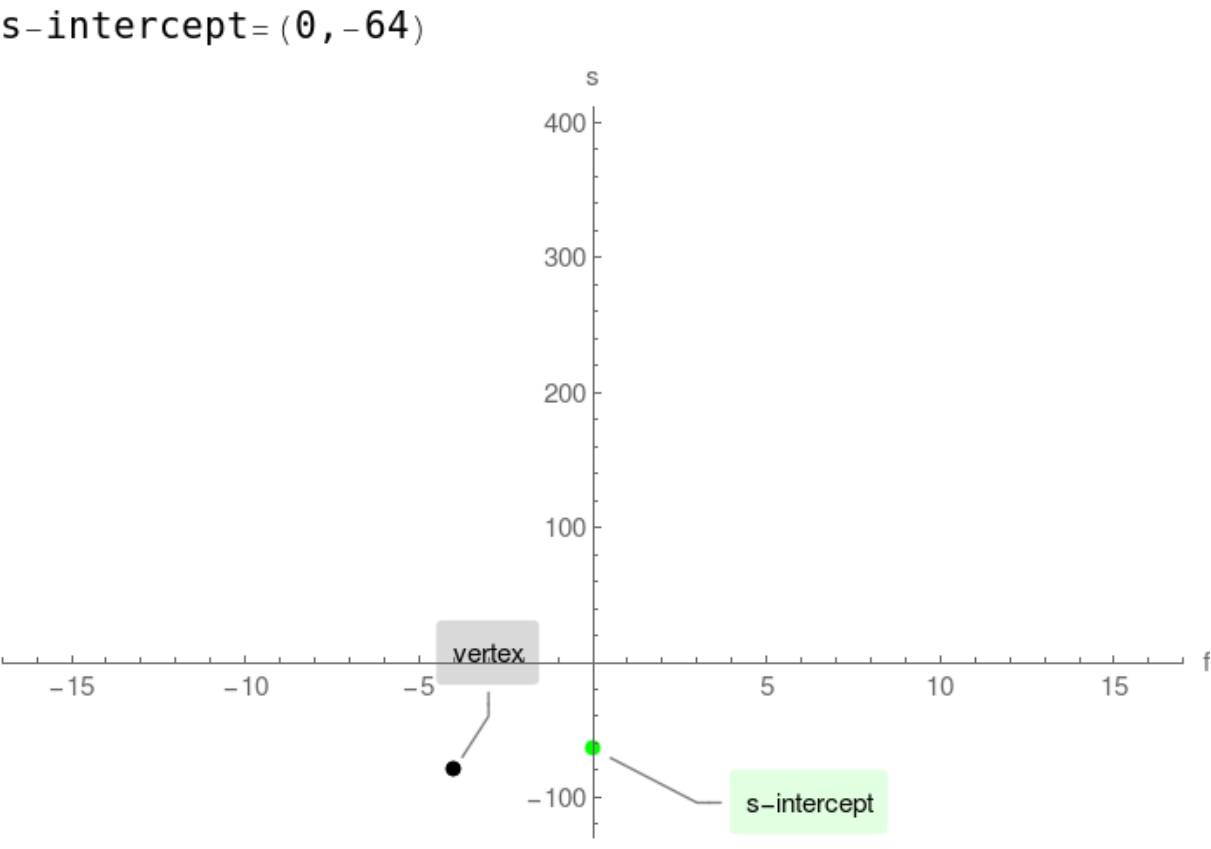
vertex $= (-4, -80)$



Step 2.

Compute s-intercept and plot single point:

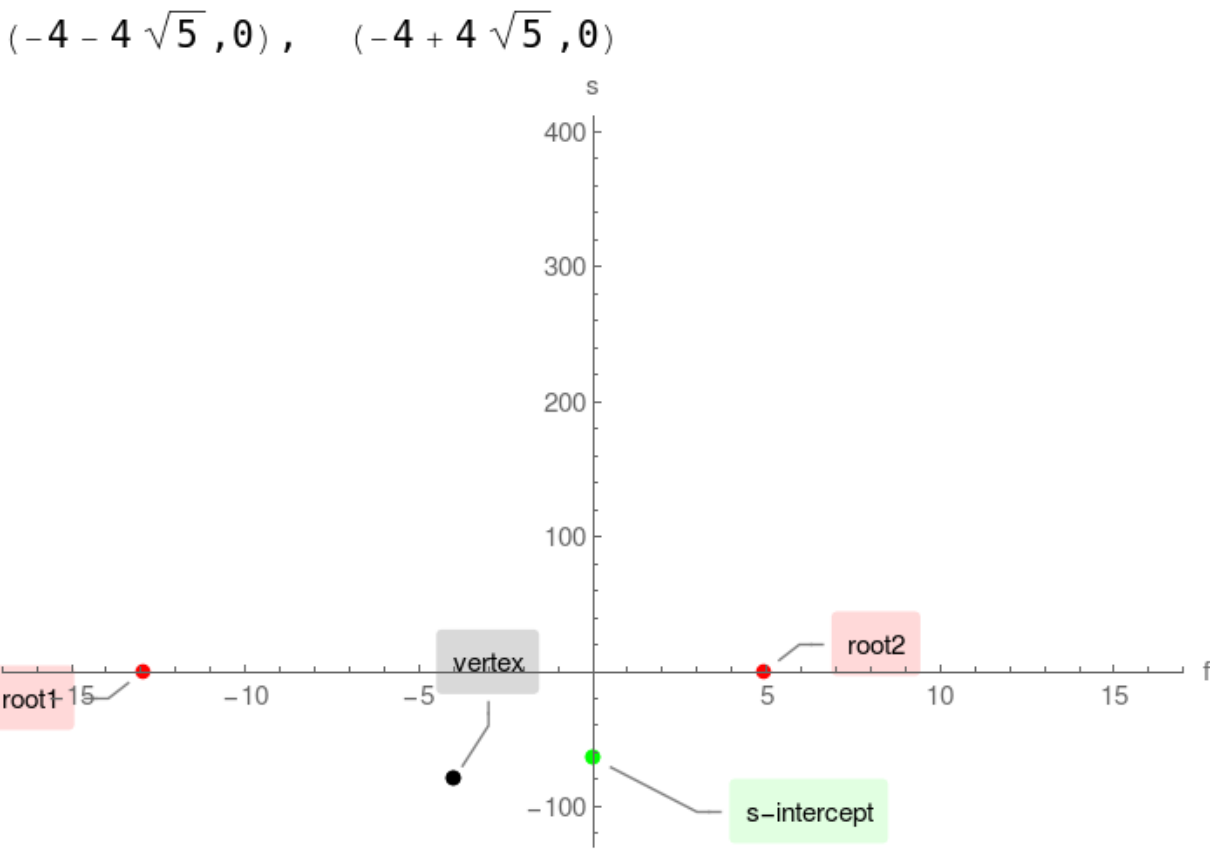
s-intercept $= (0, -64)$



Step 3.

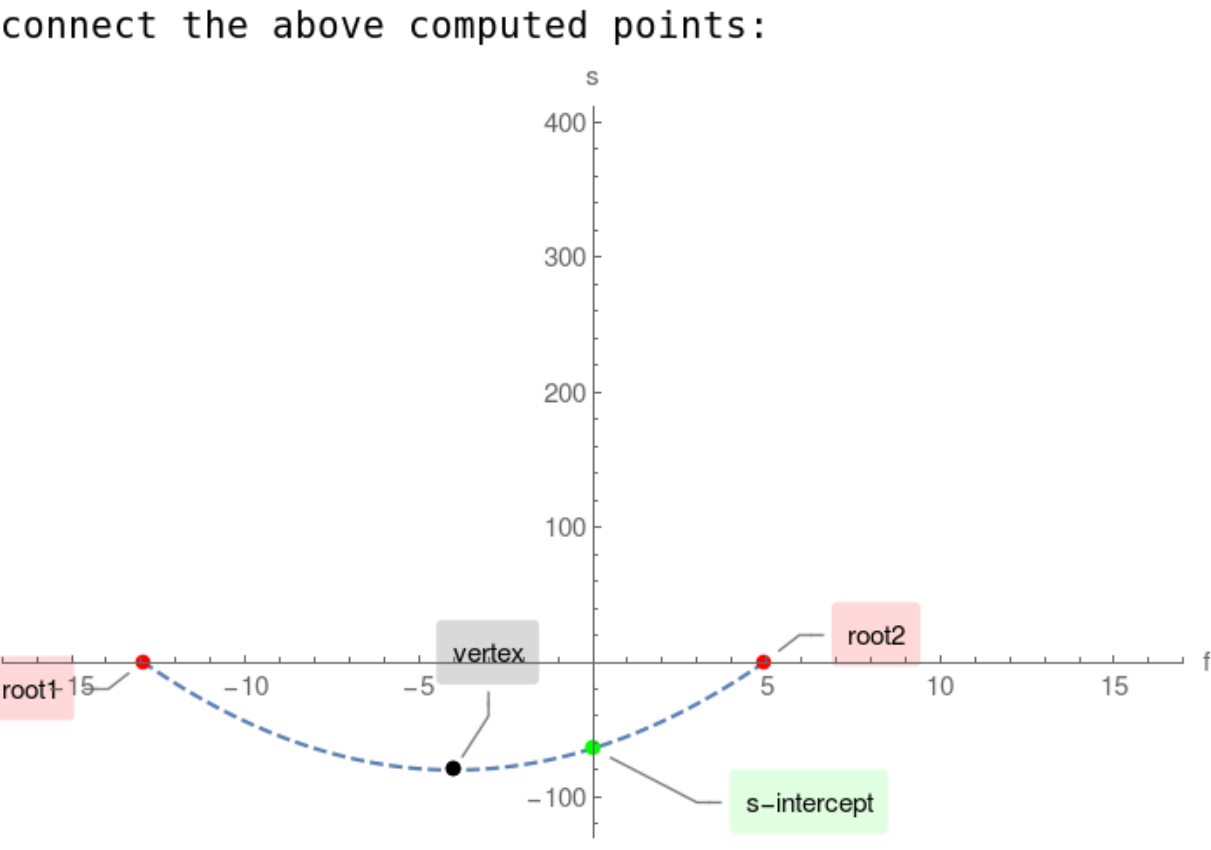
Compute f-intercepts by solving $f^2 + 8f - 64 = 0$:

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



Step 4.

connect the above computed points:



Step 5.

Extend the parabola beyond the range of intercepts