Example 3. Vertex equal to vertical intercept
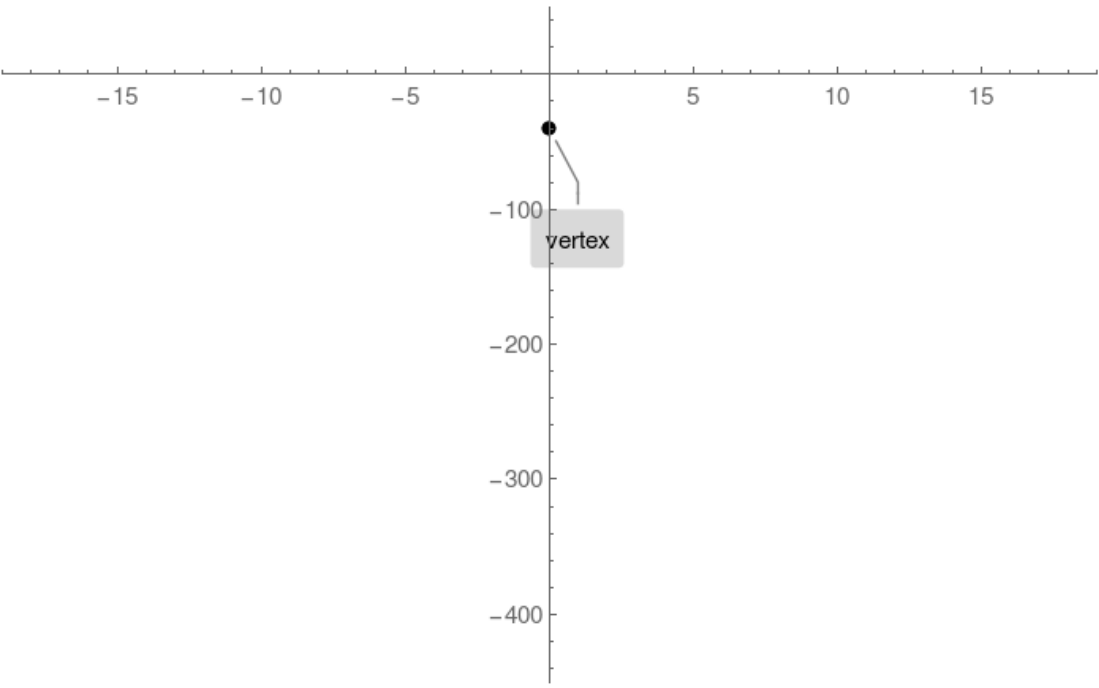
Plot $y(w) = -w^2 - 40$

Step 1.
Compute vertex and plot single point:
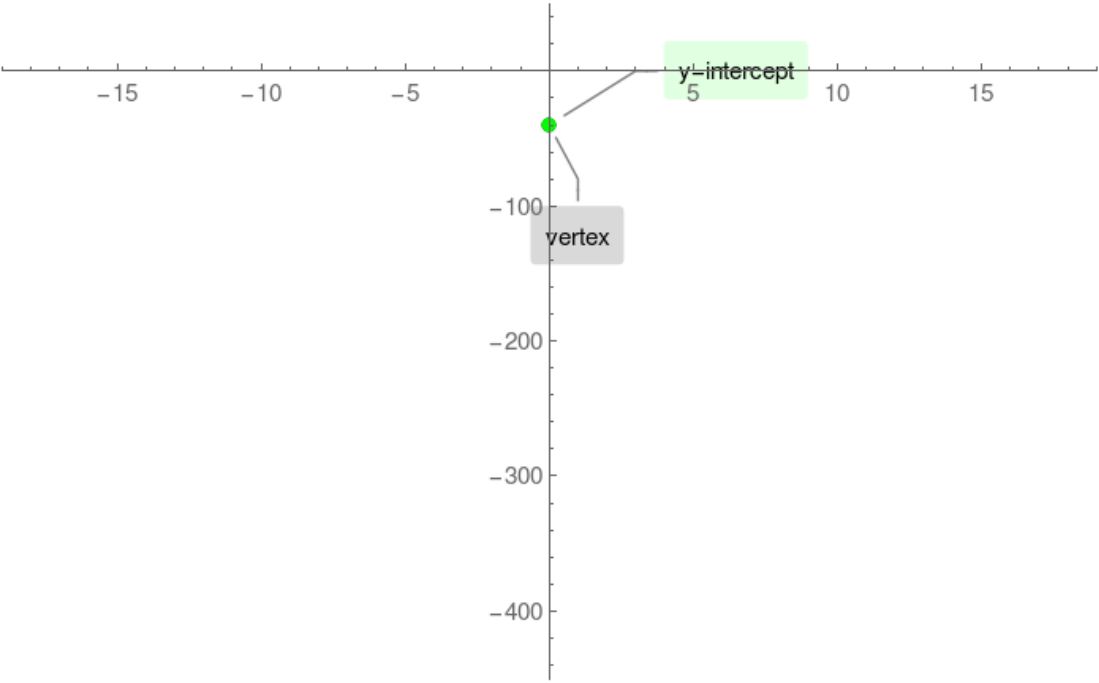vertex = $(0, -40)$

Step 2.
Compute y-intercept and plot single point:
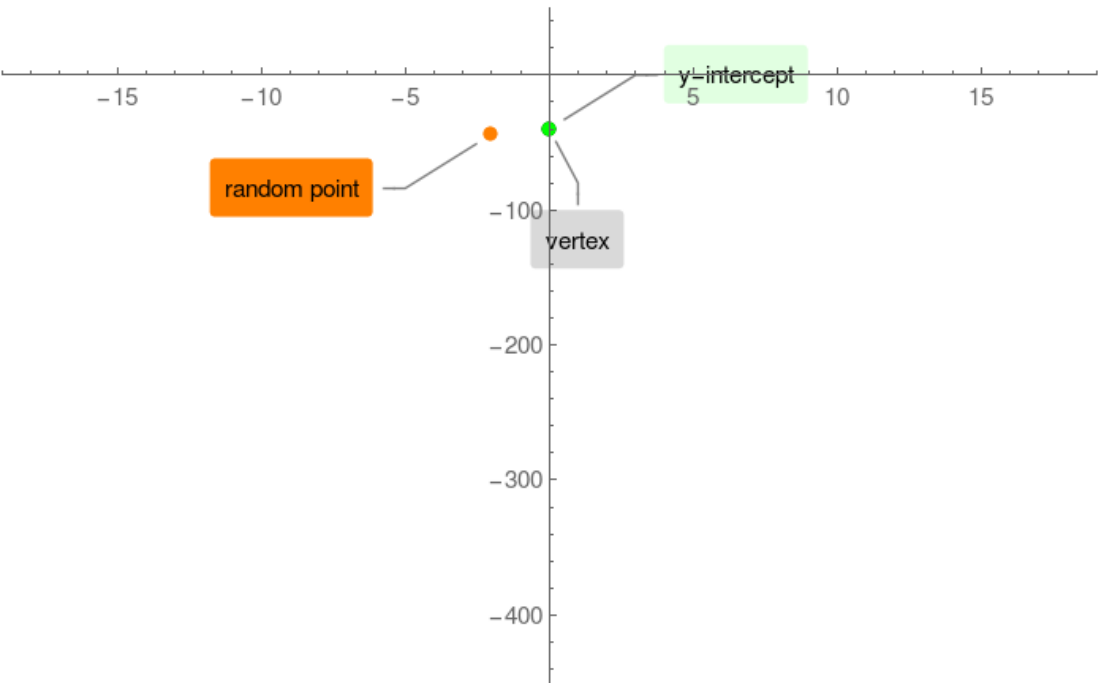y-intercept = $(0, -40)$

Step 3.
There are no w-intercepts!
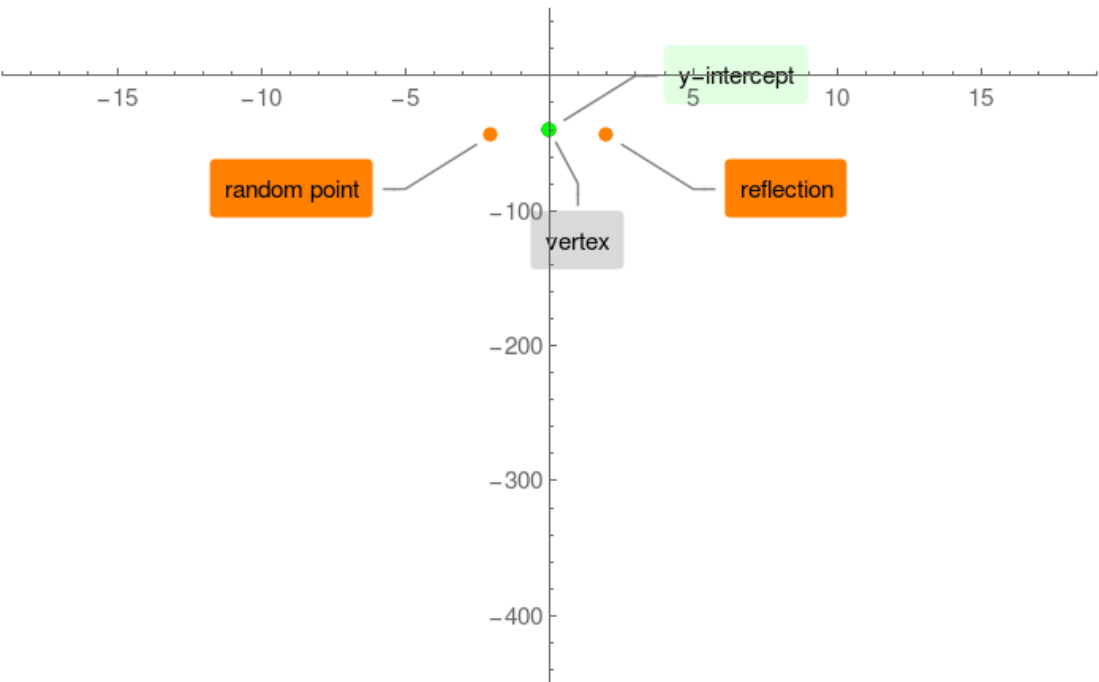Instead compute an arbitrary point on any side of vertex:
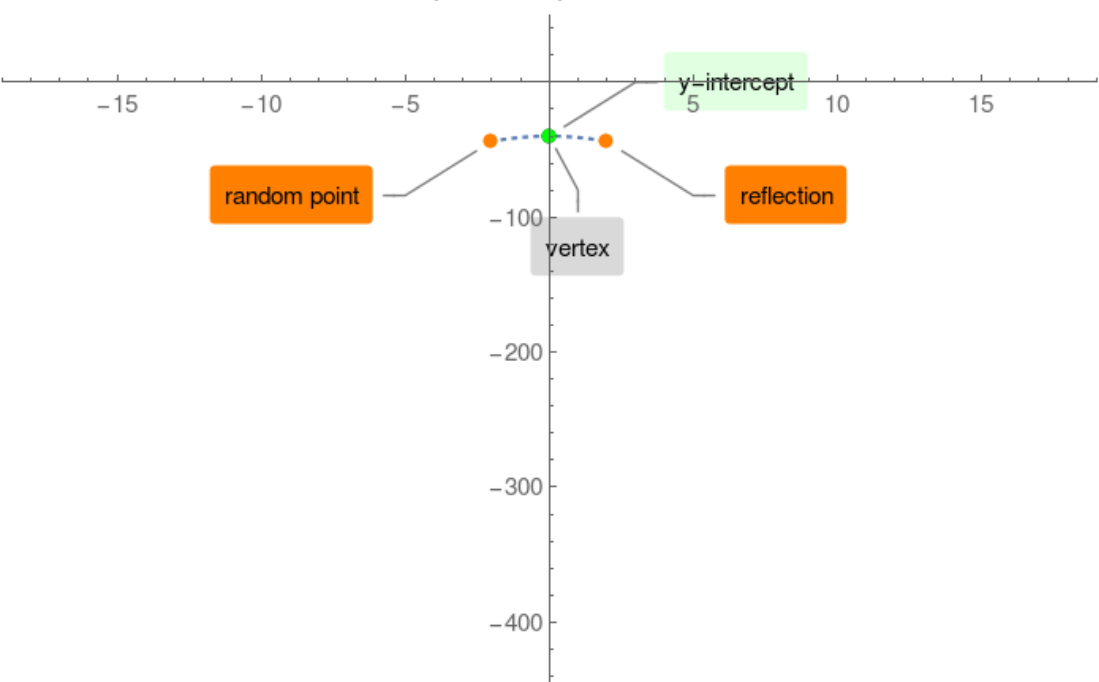Random point = $(-2, -44)$

Step 4.
Reflect the point against the vertex's vertical axes:
Reflection = $(2, -44)$

Step 5.
connect the above computed points:

Step 6.
Extend the parabola beyond the range of intercepts