Answer on Question #54914 - Math – Algebra

Consider the following quadratic function.

$f(x)=-4(x+1)^2+5$

Find the x- and y-intercepts of the graph, if any exist. (If an answer does not exist, enter DNE.)

In the points of x-intercepts y=0. Therefore:

$$-4(x+1)^2+5=0$$

Solving this quadratic equation gives us two x-coordinates: $\frac{-\sqrt{5}-2}{2}$ and $\frac{\sqrt{5}-2}{2}$.

1. x-intercept

(x, y) = $\left(\frac{-\sqrt{5}-2}{2}, \mathbf{0}\right)$ (smaller x-value)

2. x-intercept

(x, y) = $\left(\frac{\sqrt{5}-2}{2}, \mathbf{0}\right)$ (larger x-value)

In the points of y-intercepts x=0. Therefore:

$$y=-4(0+1)^2+5=1$$

$$y=1$$

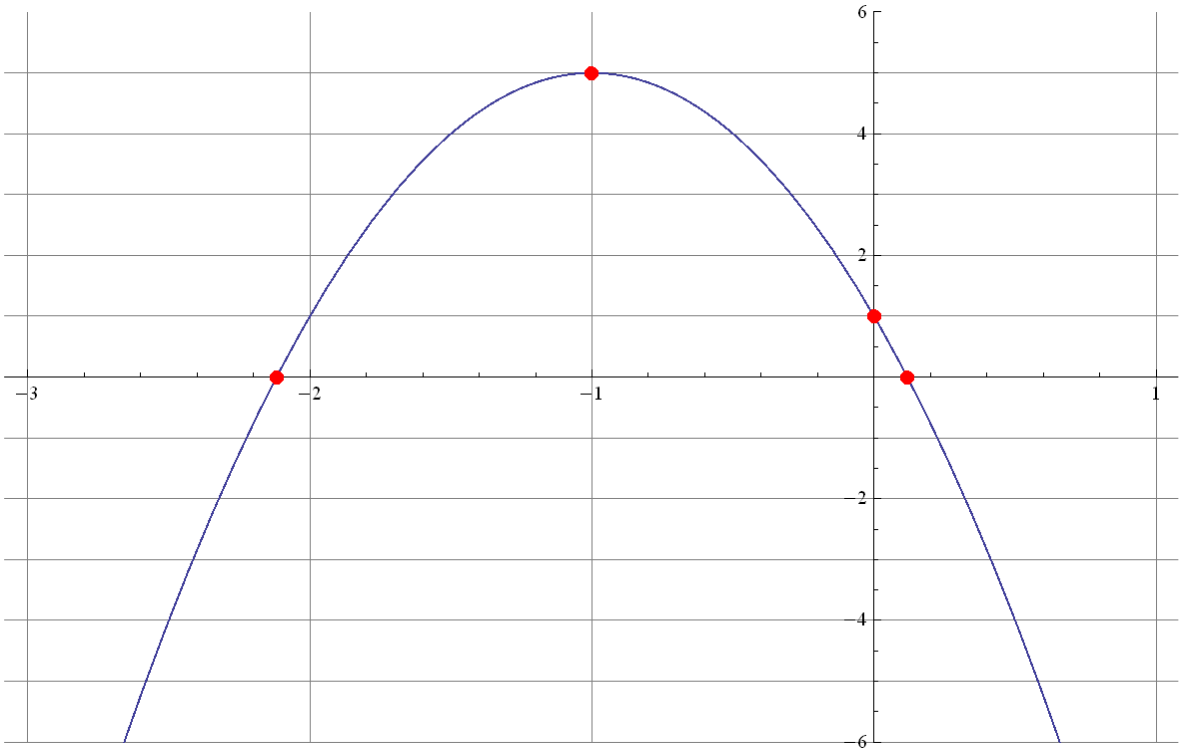
3. y-intercept

(x, y) = (0,1)

4. Convert the function into standard form.

$f(x) = -4x^2-8x+1$

5. Graph the quadratic function.



Identify the vertex and the axis of symmetry.

6. Vertex

(x, y) = (-1,5)

7. Axis of symmetry

   x= -1