

Graphing a parabola without a graphing calculator?

President Obama was asked to graph $y = x^2 - 2x - 8$



1st find the y- intercept: This is the point where the graph crosses the y-axis and x value is zero (0,-8)

2nd find the x- intercept(s): This will be where the graph crosses the x-axis and the y value is zero (sometimes there will be two points, sometimes one point and other times no point). It can be easier to first write the equation in factored form $y = (x - 4)(x + 2)$ And then use the zero-product property, (if $ab = 0$ then either $a = 0$ and/or $b = 0$).

$$y = (x - 4)(x + 2)$$

Thus we would have $0 = (x - 4)(x + 2)$ so there are two x-intercepts here

$$\rightarrow x = 4 \rightarrow x = -2$$

(4,0)and(-2,0)

3rd find the line of symmetry (L.O.S.): To find this line first realize it is exactly halfway between the x-intercepts. So the equation for this line would be $x = 1$.

4th find the vertex (A.K.A. the maximum or minimum point): First realize that the line of symmetry runs through the vertex and thus the x-coordinate must have the same value as the line does so all that is left is to find the y-value for this point (-1,y - value?). This can be found by substituting the x-value in to the equation, since every point on the graph

$$y = (x - 4)(x + 2)$$

is also a solution to the equation. $y = (1 - 4)(1 + 2)$ thus the vertex point is (1,-9).
 $y = (-3)(3)$

$$y = -9$$

5th find two random points to shape out the parabola :

x	-3	3
y	7	-5

6th plot the points and create the parabola on the coordinate plane and be proud of your work knowing you did not give up when things got hard! Because at the end of the day, there is no excuse for not trying!

