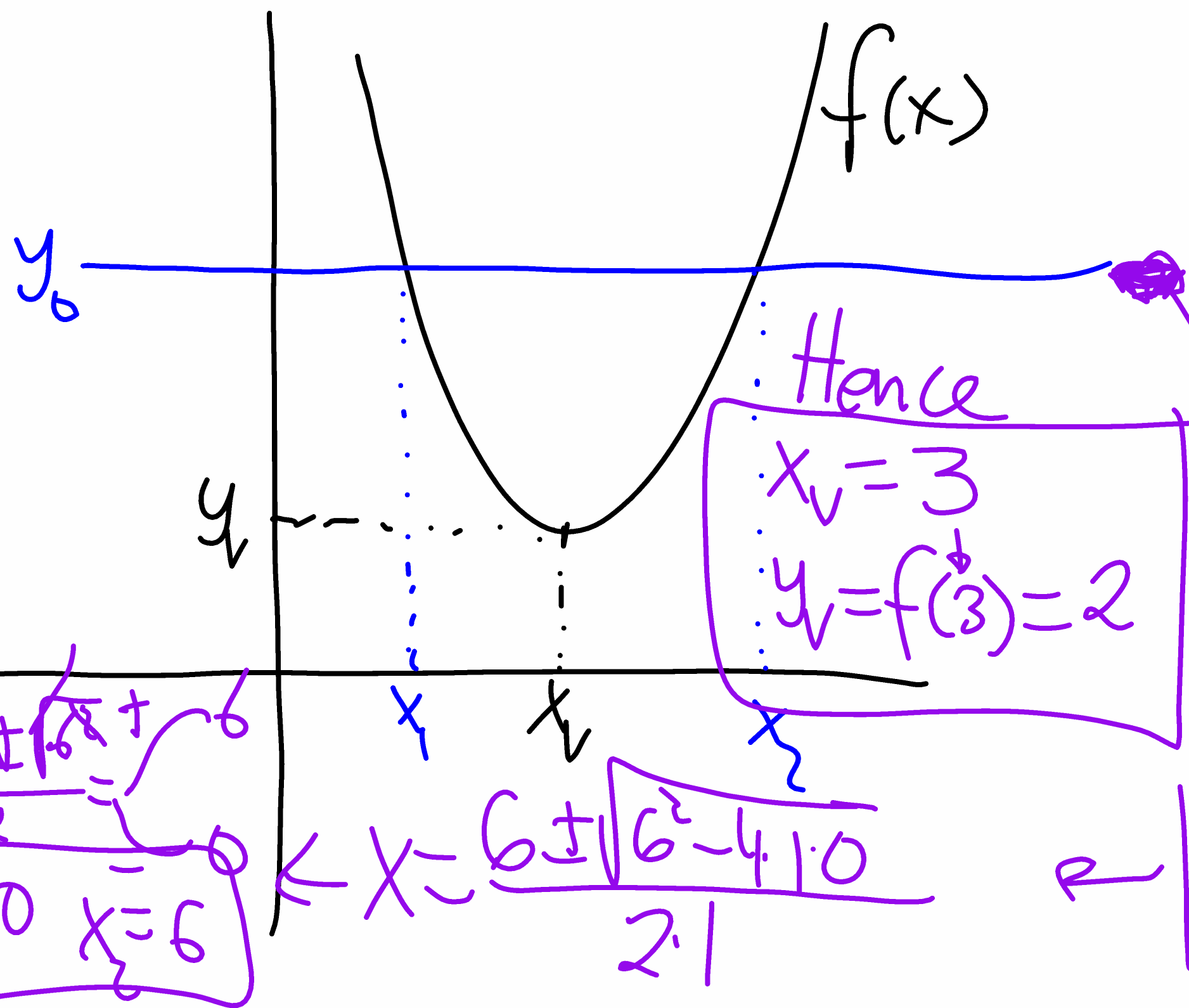


How to determine the vertex of a Q funct. Thu 21 Feb 2019



Example $f(x) = (x-3)^2 + 2$
This is vertex form. Hence, we know the the vertex is $(3, 2)$. Let's see that the method works too.

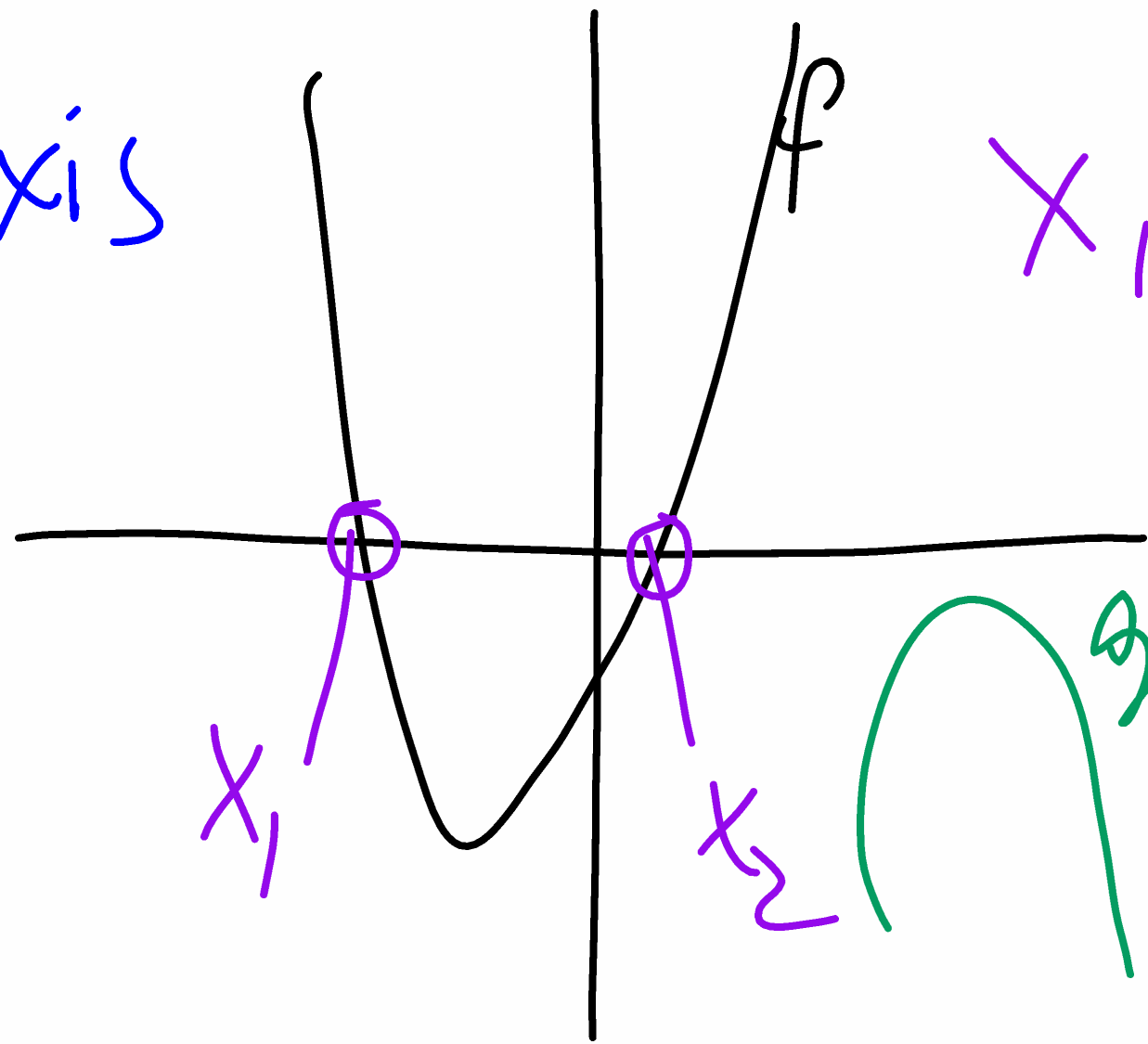
For y_0 we choose $f(0) = 11$
Next we find the values of x such that

$$f(x) = 11$$
$$(x-3)^2 + 2 = 11$$
$$x^2 - 6x + 9 + 2 = 11$$
$$x^2 - 6x + 0 = 0$$
$$a=1 \quad b=-6 \quad c=0$$

How to we find the zeros graphically?

1) We plot the function (e.g. using geogebra)

2) We find the x -values where the function crosses the x -axis

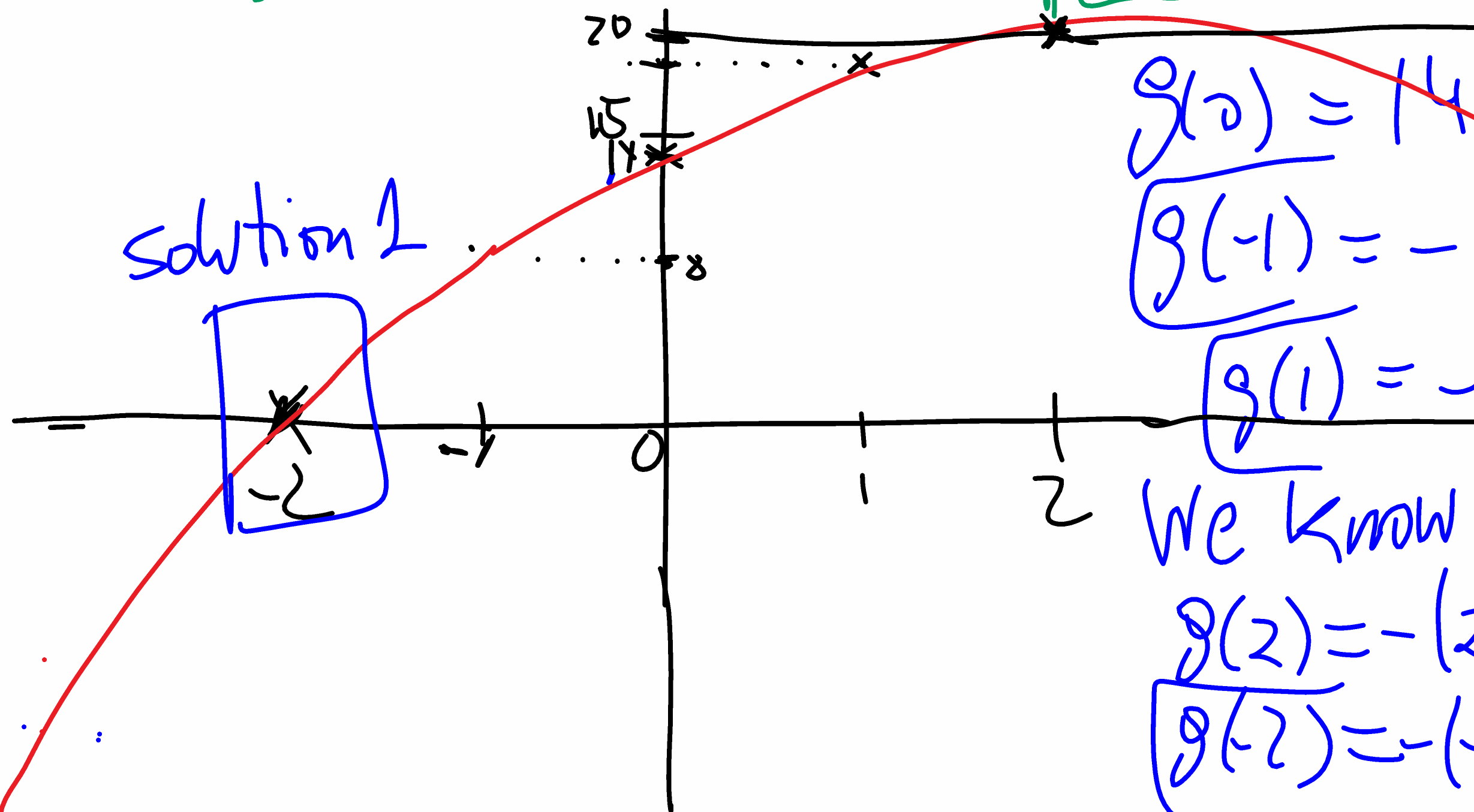


x_1 & x_2 are the zeros of this function

The function g does not cross the x -axis
Hence, it has NO zeros

Example: Graph by hand & use graph to solve equation

a) $g(x) = -x^2 + 5x + 14$ || $\boxed{g(x) = -x^2 + 5x + 14 = 0}$



$$g(0) = 14$$

$$\boxed{g(-1) = -(-1)^2 + 5(-1) + 14 = -1 - 5 + 14 = 8}$$

$$\boxed{g(1) = -(1)^2 + 5(1) + 14 = -1 + 5 + 14 = 18}$$

We know it goes downward

$$g(2) = -(2)^2 + 5(2) + 14 = -4 + 10 + 14 = 20$$

$$\boxed{g(-2) = -(-2)^2 + 5(-2) + 14 = -4 - 10 + 14 = 0}$$