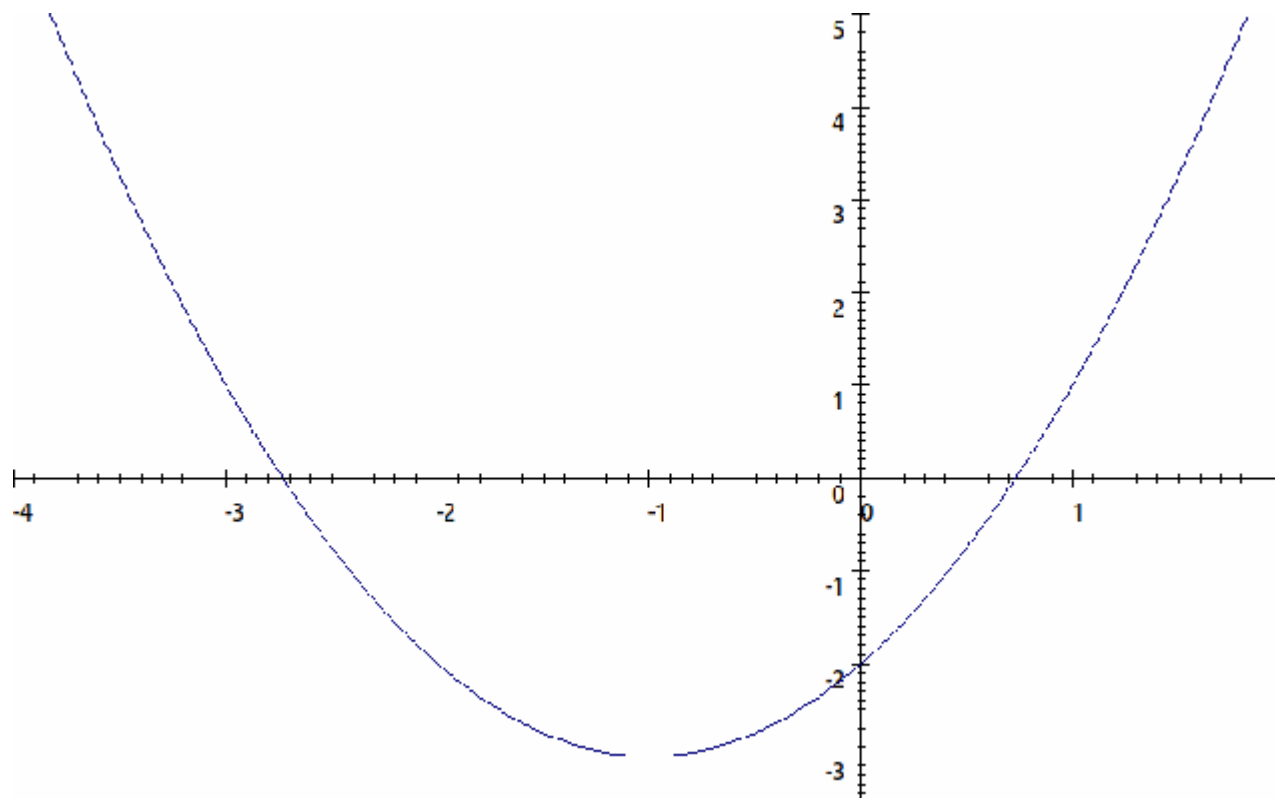


## Solving Equatins Graphically

Suppose we sketch the graph  $y = x^2 + 2x - 2$ . We obtain the graph below.



We can use the graph to solve the equation  $y = x^2 + 2x - 2 = 0$  by finding the intersection of the graph with the  $x$  – axis, since this is where  $y = 0$ . Suppose we want to solve a different equation – for example,  $y = x^2 - x - 1$ . We could sketch the graph of  $y = x^2 - x - 1$  and find the intersection of the graph with the  $x$  – axis. It is quicker however to subtract the equation from the expression of the graph above.

$$y = x^2 + 2x - 2$$

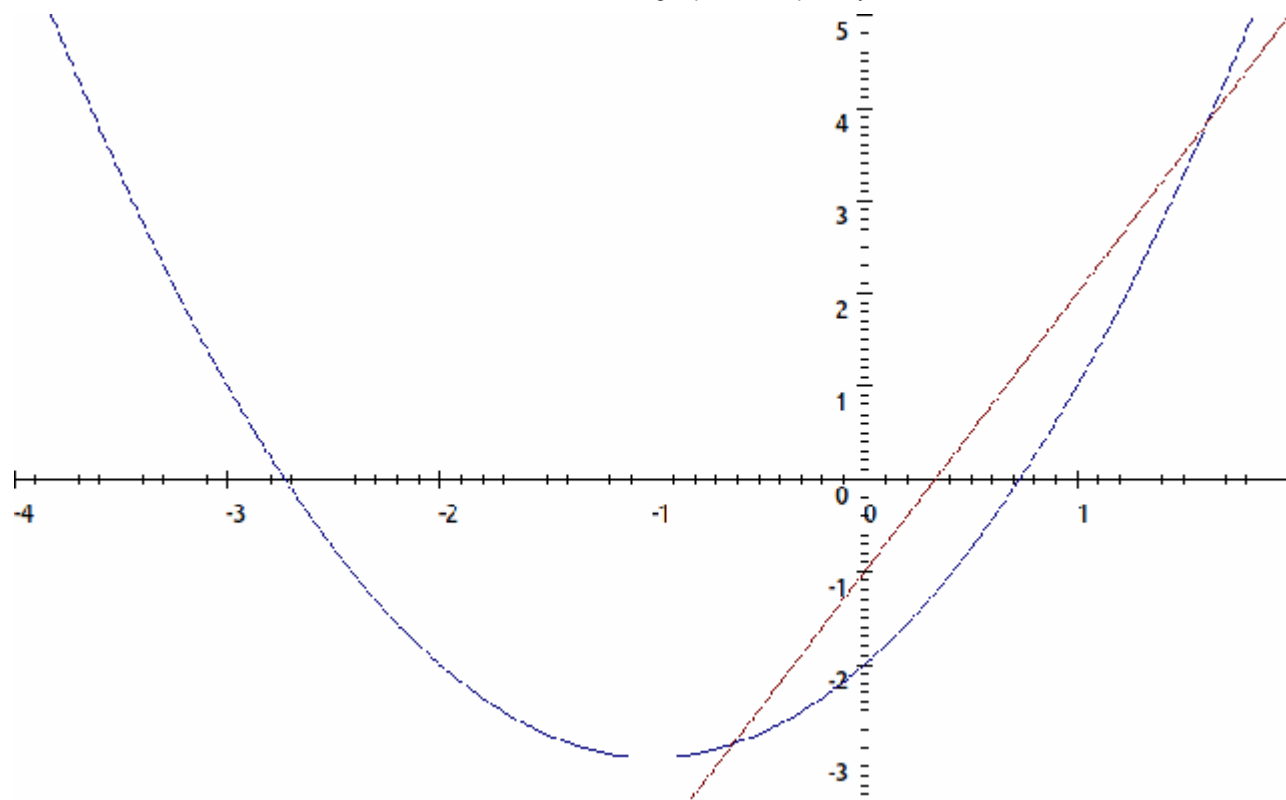
minus

$$0 = x^2 - x - 1$$

equals

$$y = 3x - 1$$

Plotting the graph of  $y = 3x - 1$  on the diagram above gives the diagram



The solution to  $0 = x^2 - x - 1$  is where the  $x$  - values of the points where the graphs cross. These are  $x \simeq -0.6$  and  $x \simeq 1.6$ .