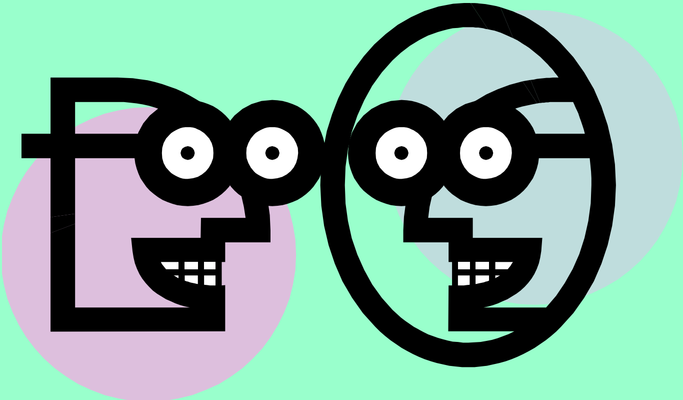
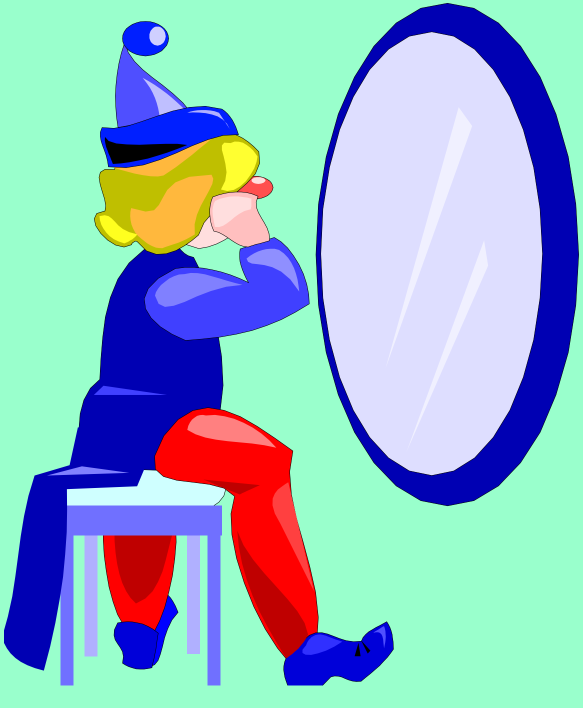


11.

Graph of f(-x)

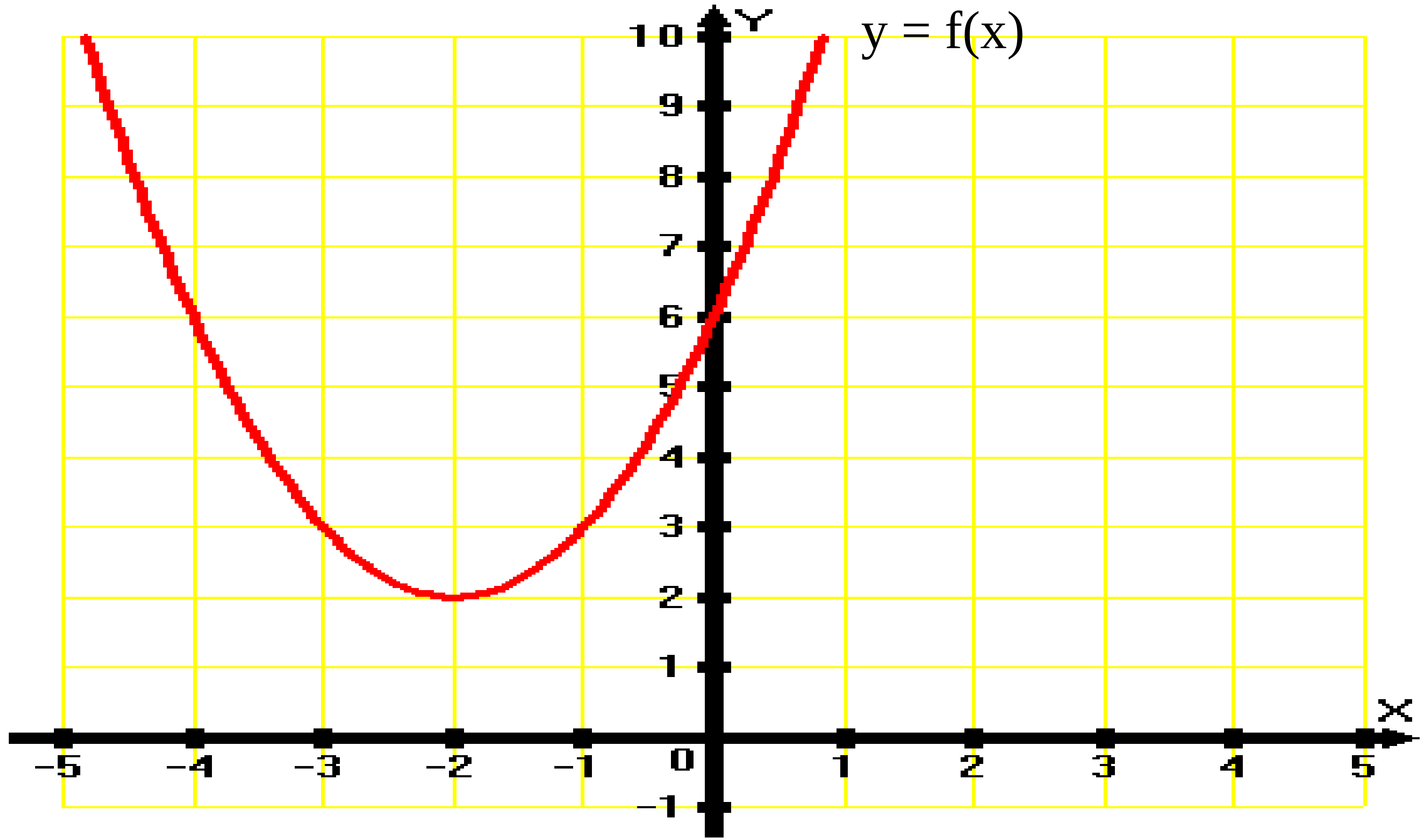


Graph of f(-x)

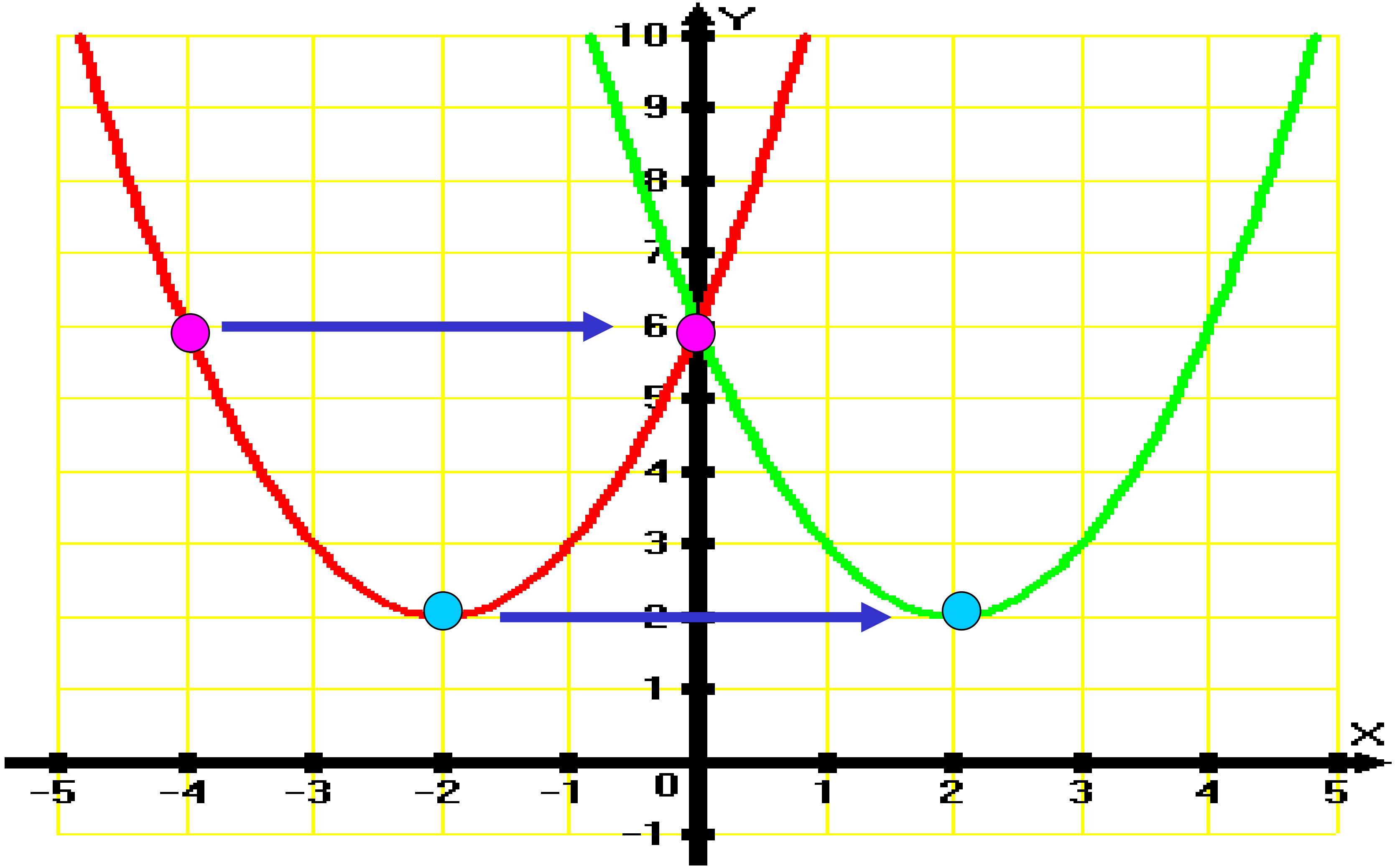
We are now going to look at what happens to f(x) if we change the polarity (change the sign) of the x-values.

That is: $y = f(x) \rightarrow y = f(-x)$

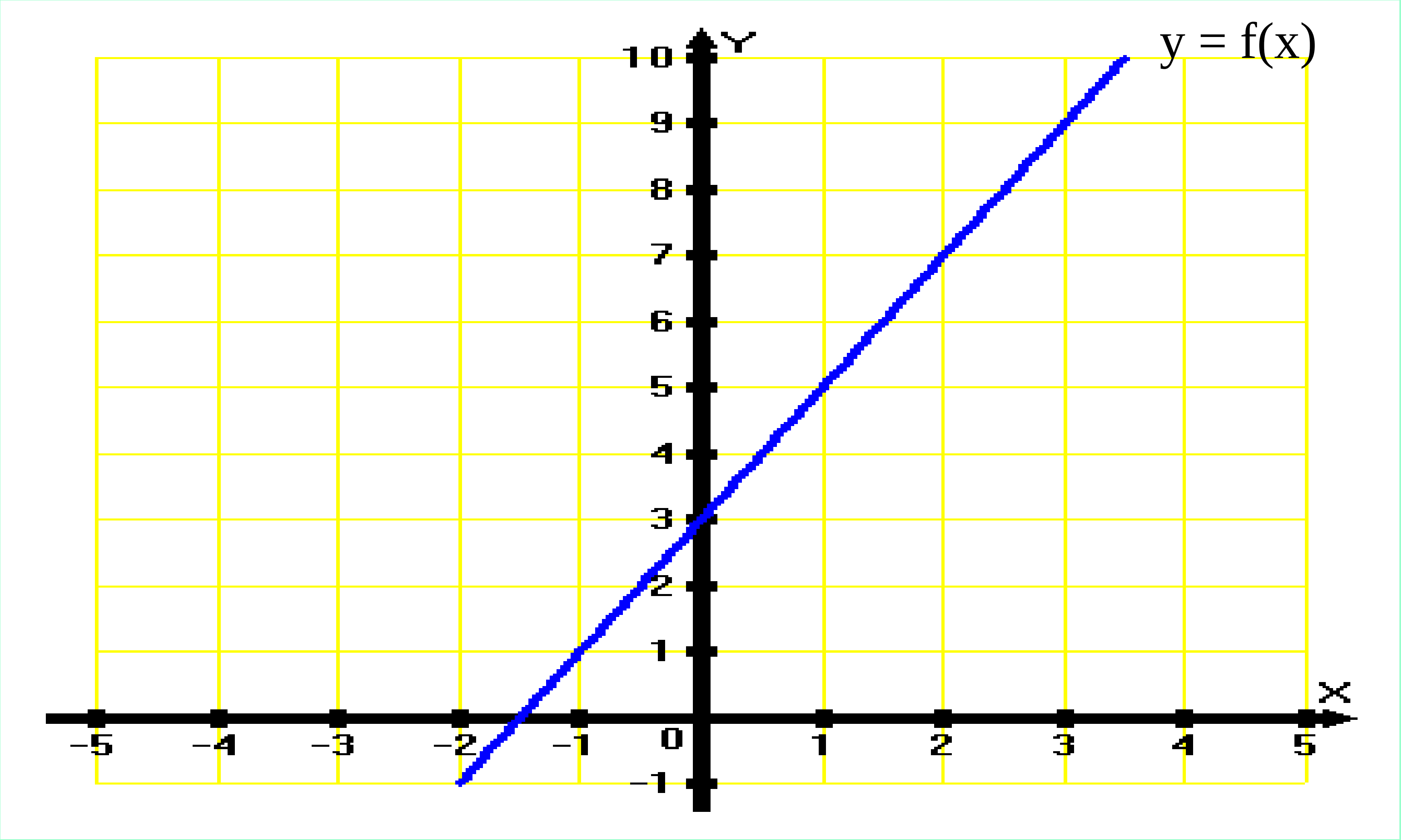
This time we will start with the function $y = (x + 2)^2 + 2$:



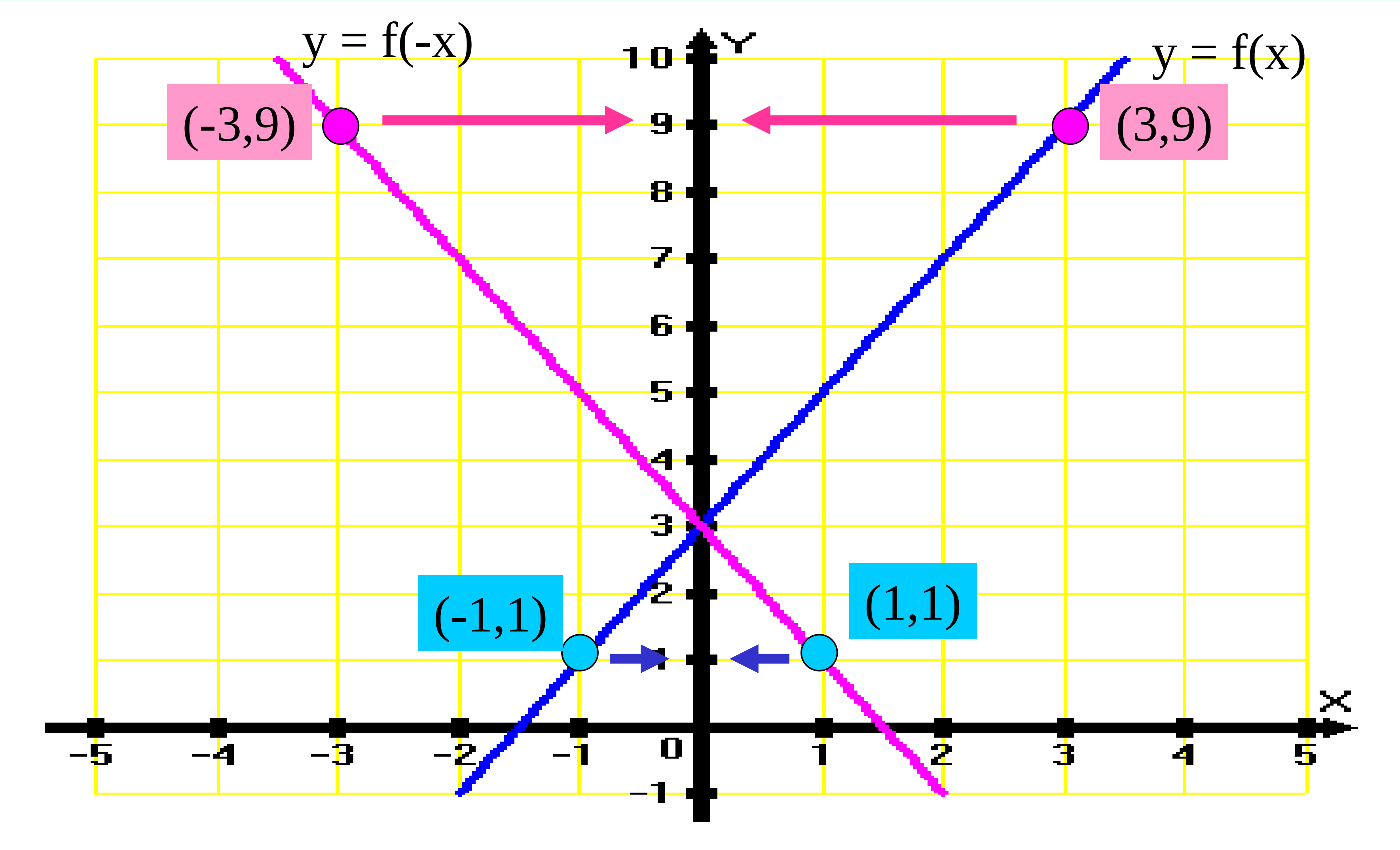
What will happen if we change this to $y = ((-x) + 2)^2 + 2$?



EFFECT : It looks like the graph has been moved 4 units to the right. We established previously that this would mean f(x) has mapped to f(x - 4). Do both have the same effect? Lets look at another graph to confirm this.

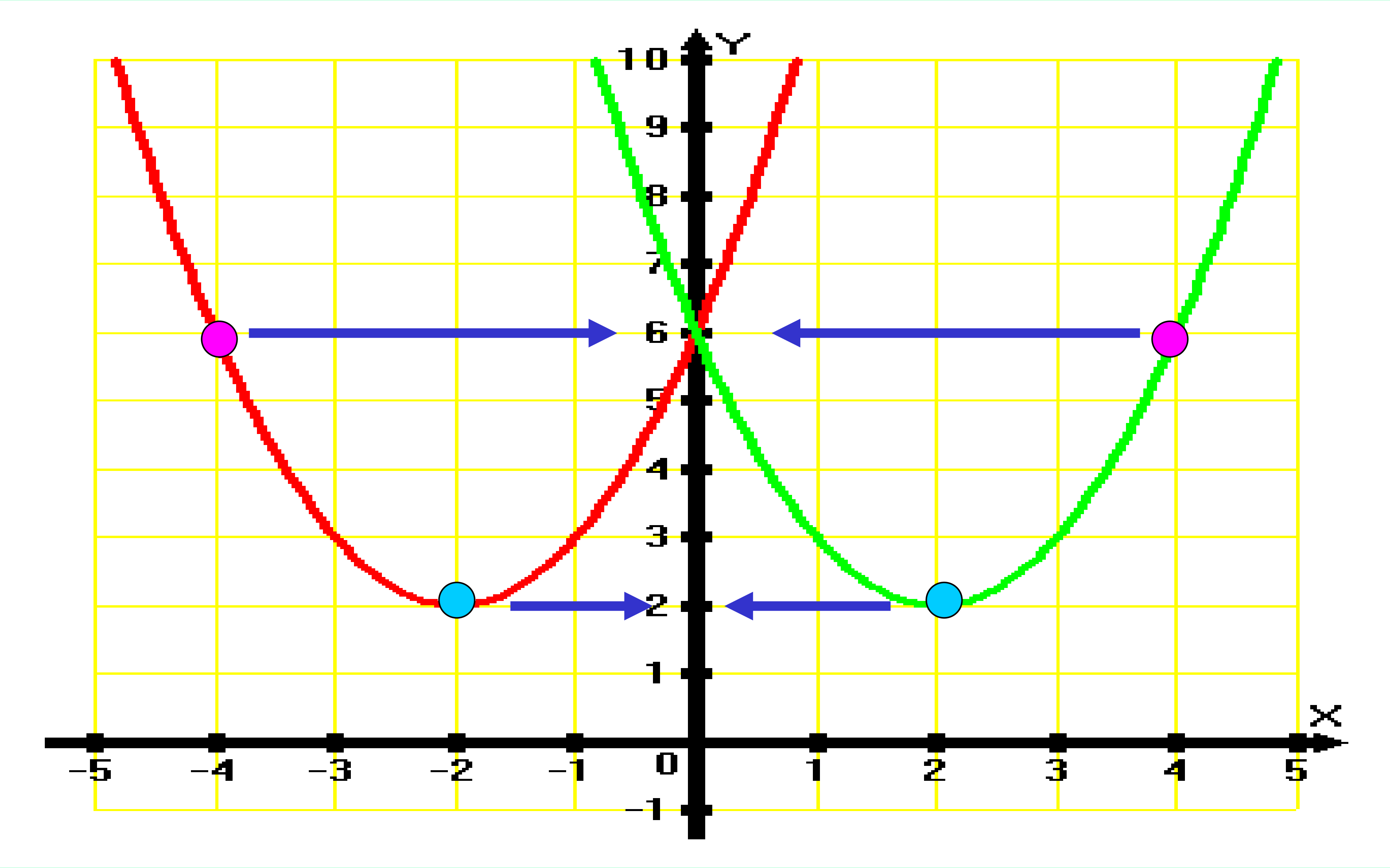


This is the graph of y = 2x + 3. Lets see what happens if we draw the graph of y = f(-x) ie. (y = -2x + 3)



What is the connection between these points?

The points are the images of each other after reflection in the y-axis



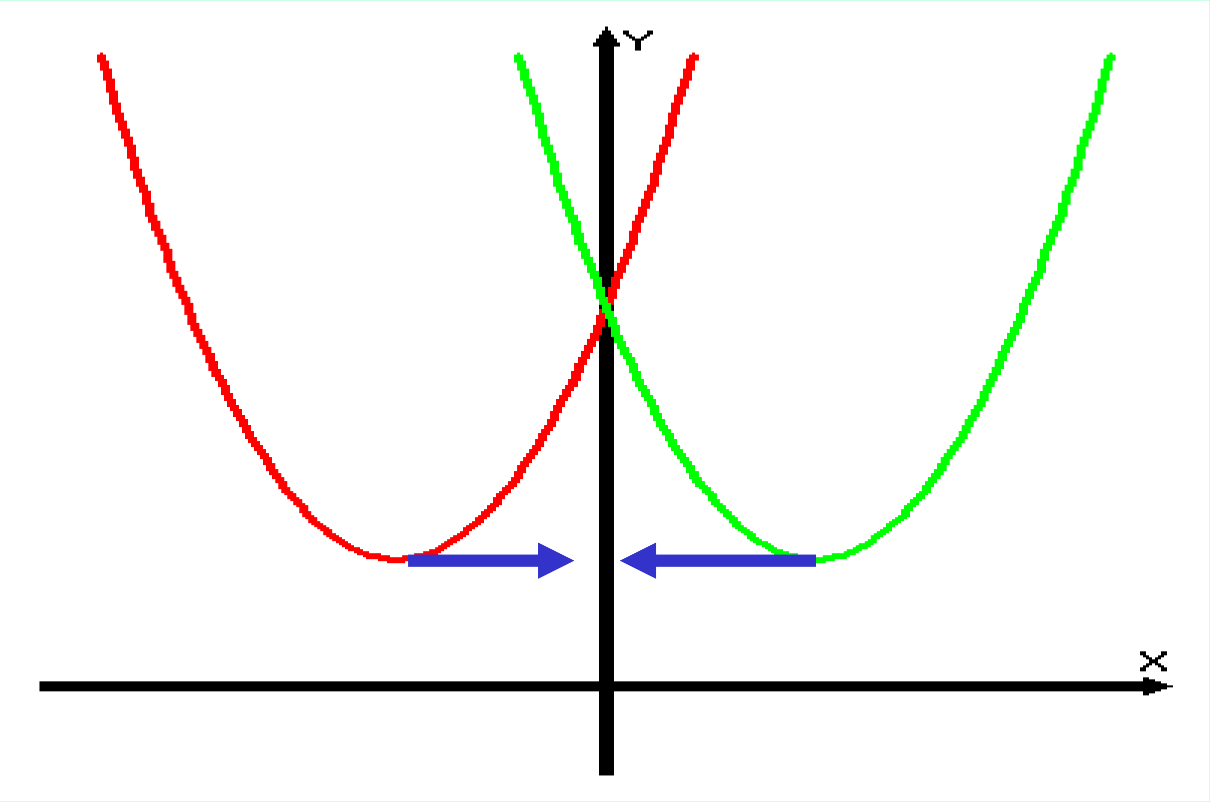
If we return to our original function we can see that these points are images of each other after reflection in the y-axis.

Graph of y = f(-x)

Copy the following:

To obtain graph of **y = f(-x)** reflect y = f(x) in the y-axis

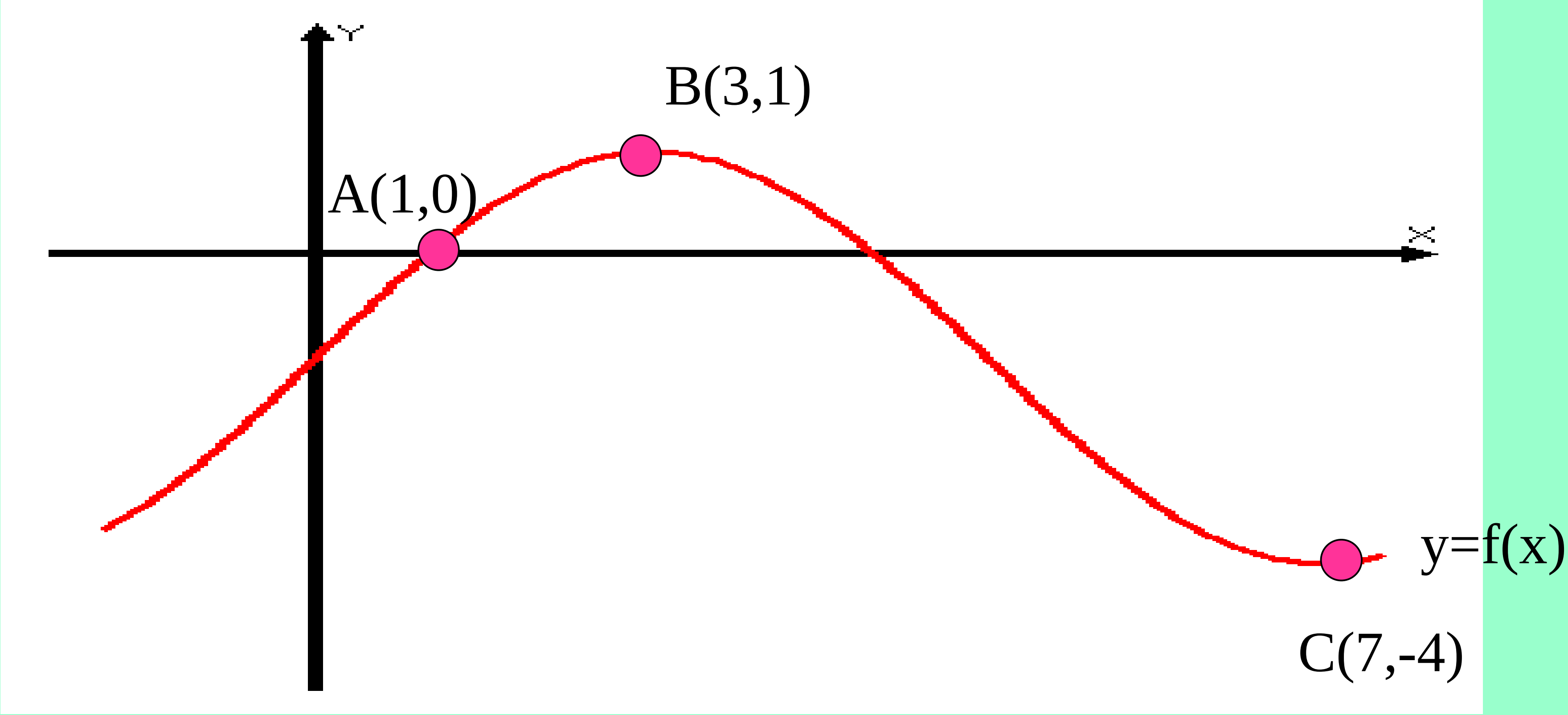
Change the sign of the x-coordinate so $(a,b) \rightarrow (-a,b)$



Example

Shown is the graph of f(x).

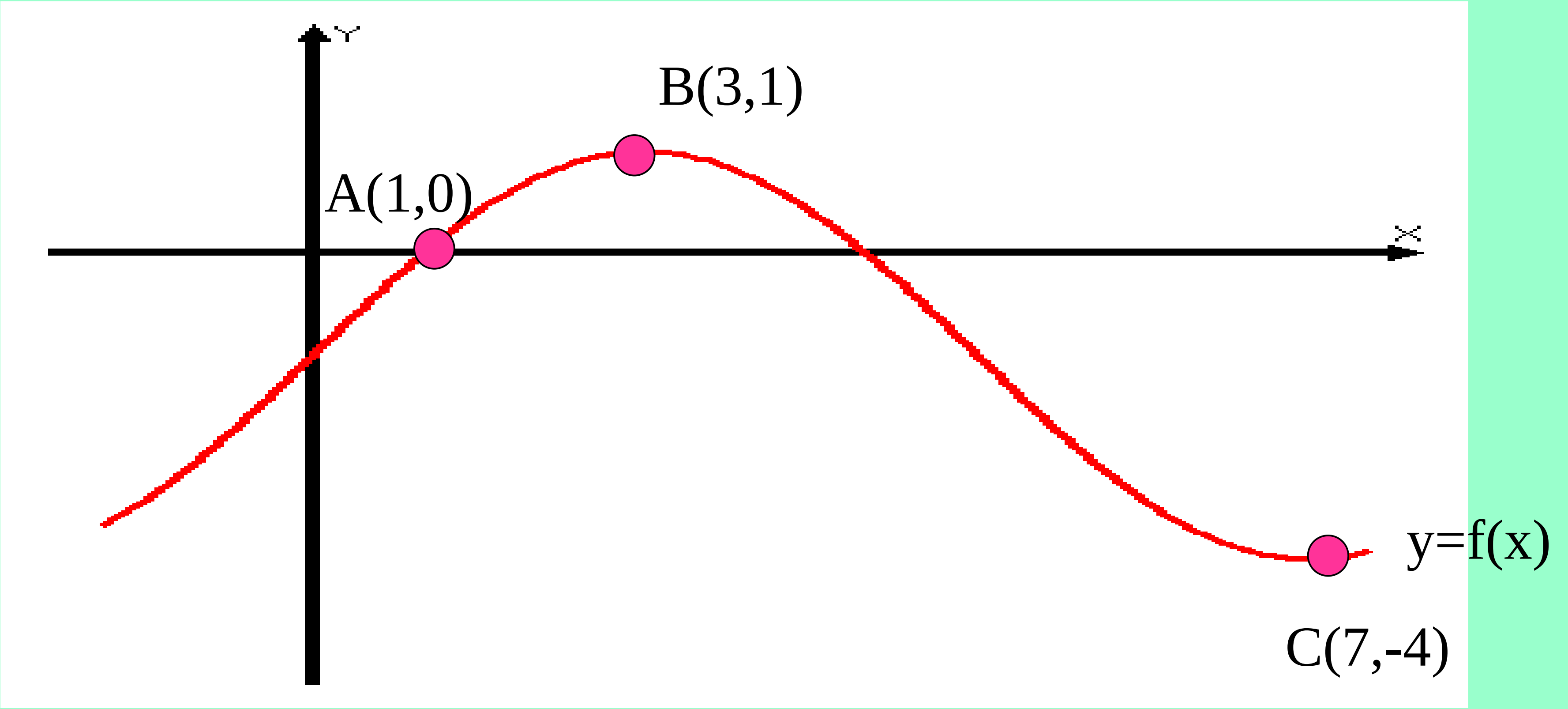
Sketch the graph of f(-x), clearly annotating the images of A, B and C.



Solution:

As required graph is y = f(-x) we **change sign** of each x-coordinate.

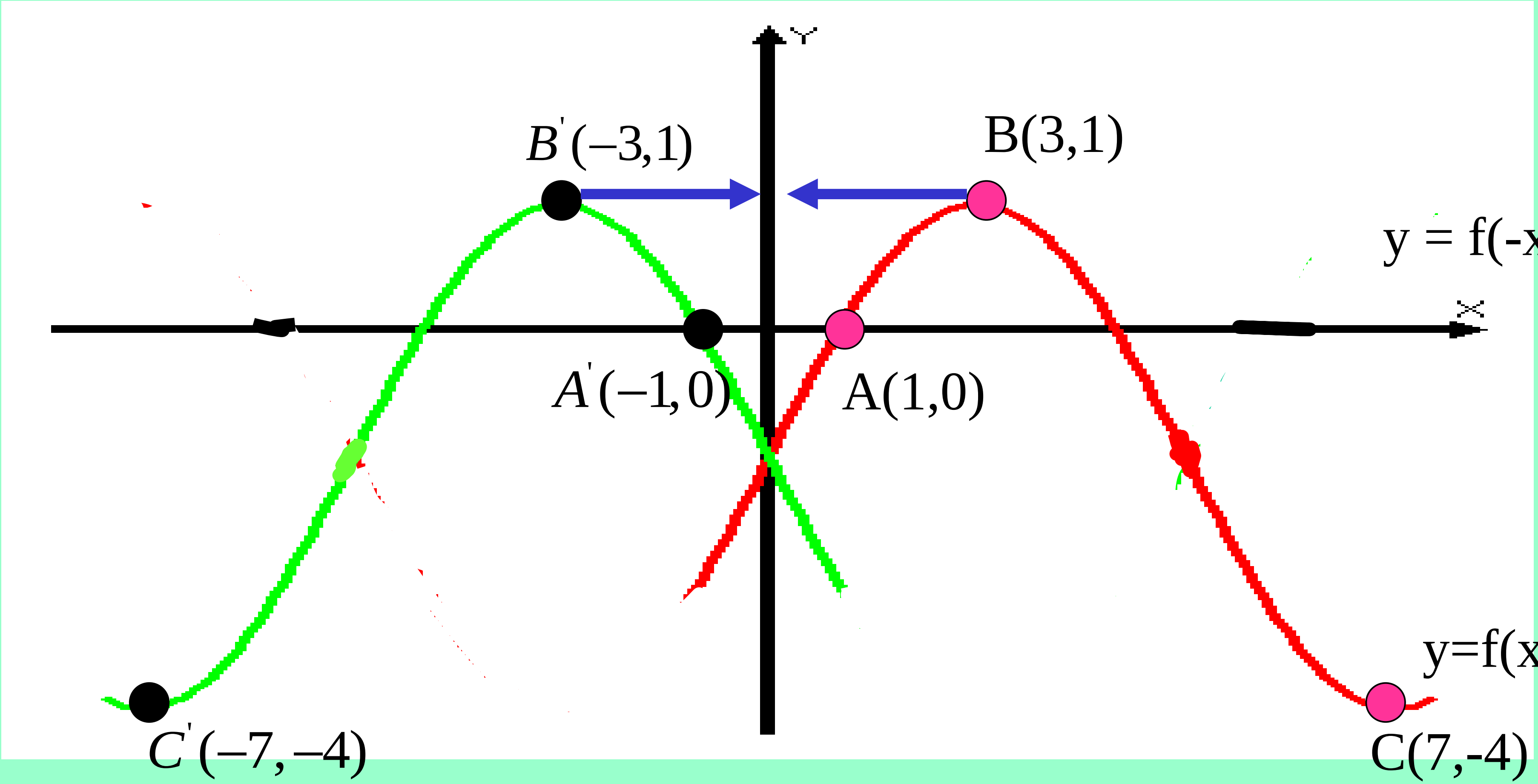
$$A(1,0) \rightarrow A^{'}(-1,0) \qquad B(3,1) \rightarrow B^{'}(-3,1) \qquad C(7,-4) \rightarrow C^{'}(-7,-4)$$



Solution:

As required graph is y = f(-x) we change the sign of each x-coordinate.

$A(1,0) \to A'(-1,0)$ $B(3,1) \to B'(-3,1)$ $C(7,-4) \to C'(-7,-4)$



Heinemann, p.41, Ex 3I,
Q2 & 4