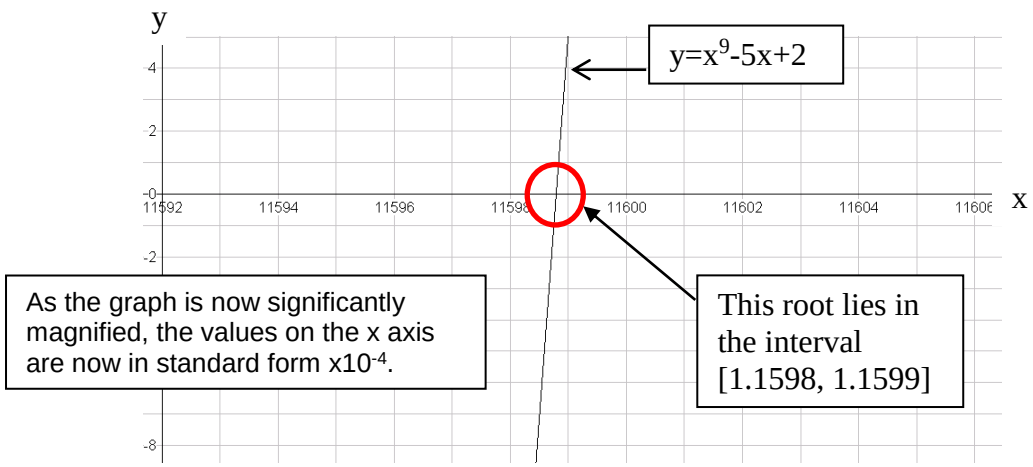

The interval has now been narrowed down to the acceptable level of accuracy (3 d.p.) – so the root is 1.160 to 3 d.p. as all values in the interval [1.1598, 1.1599].

This can be confirmed by using the change of sign method with the error bounds, the lower bound of the root is 1.1595 and the upper bound is 1.1605, using the change of sign method, f(1.1595) = -0.00927, and f(1.1605) = 0.01524, this change of sign showing that the root does lie between the lower bound of 1.1595 and the upper bound of 1.1605.

Problems with method

There are some situations which can cause problems with change of sign methods if the method is applied 'blindly' without looking at the graph of the function.

Consider the equation: $3.247x^3+10.249x^2-15.12=0$

x	f(x)
-5	-164.77
-4	-58.944
-3	-10.548
-2	-0.1
-1	-8.118
0	-15.12
1	-1.624
2	51.852
3	164.79
4	356.672
5	646.98

The table shows a search of integer intervals for a change of sign.

This extensive integer search has only identified one change of sign in the interval [1, 2].

This would lead us to now search further for a root in the interval [1, 2] and assume that this is the only root in that interval.