

Section 1: Polynomial functions and graphs

Crucial points

- 1. Always check your work carefully**
It is very easy to make silly mistakes when manipulating algebraic expressions.
- 2. When multiplying out brackets, make sure that you know how many terms there should be**
You can find out how many by multiplying together the number of terms in each bracket, so that you know that you have not missed any.
- 3. Make sure that you know the basic rules about polynomial graphs**
A polynomial of degree n crosses the x axis at most n times and has at most $n - 1$ turning points.
A repeated root means that the graph touches the x -axis at this point.
- 4. Don't lose easy marks when sketching polynomials**
You will often be asked to sketch a polynomial which you have already factorised. Remember you are being asked for a sketch, so you should do this in your answer booklet and NOT on graph paper. You should certainly not be wasting time plotting points. Make sure that your graph does not stop at the axes, that you have shown all the points at which the graph cuts the axes (including the y -axis), and that your graph is the correct way up.
- 5. Use a graphical calculator with caution**
If you have a graphical calculator, you may find it useful to check the shape of a graph. However, you should understand the principles of graph sketching and be able to show your reasoning. If you don't choose appropriate scales on a graphical calculator, you may not see important features. If you are asked to give exact values for intersections, reading them off a graph may not be adequate.