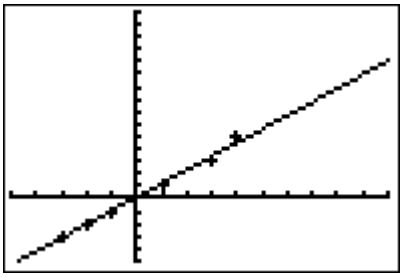
Chapter 1 Web Task

Tangents to Polynomial Functions

This task is best done using technology.
For each of the functions below

- Draw an accurate graph
- Find the slope of the tangent to the curve at six or more different points
- Construct a table of values in the form (*x*, slope of tangent at *x*)
- Construct a scatter plot and find the equation of the line or curve of best fit for the points
  (*x*, slope of tangent at *x*)



a) $y = x^2 - x - 6$

b) $y = x^3 - 3x^2 - 6x + 8$

c) $y = 2x^3 - 19x^2 + 11x + 30$

d) $y = 3x^2 + 16x - 35$

- Conjecture a relationship between the degree of the original function and the degree of the function formed by values of tangent slopes. Support your conjecture with mathematical reasoning.

- Conjecture a method of finding the function formed by values of tangent slopes based on the original function, without actually calculating the slopes.

- Consider the function $y = 3x + 5$. Does your conjecture work for this function?

- Check your conjecture by constructing a polynomial function of your own, finding tangent slope values, and finding the equation of the function formed by the tangent slope values.