- 10 The equation of a curve is $y = x^2 3x + 4$.
 - (i) Show that the whole of the curve lies above the *x*-axis. [3]
 - (ii) Find the set of values of x for which $x^2 3x + 4$ is a decreasing function of x. [1]

The equation of a line is y + 2x = k, where k is a constant.

(iii) In the case where k = 6, find the coordinates of the points of intersection of the line and the curve.

[3]

(iv) Find the value of k for which the line is a tangent to the curve.

[3]