1 Question 1.1

Twenty points are represented which when connected together form an ellipse. The Matlab script illustrates the diagram

2 Question 2.1

The figure demonstrates four different curves for a series of values of k. As it is shown, the curvature of the curve increases as the value of k increases. For all cases, however, the curves are tangents at starting and end points. The increased maximum value of each curve differentiates it from one another.

3 Question 2.2

The polynomial form of the equation can be written as

$\mathbf{x(u)} = -6u^3 + 9u^2 + u$

$\mathbf{y(u)} = -4u^2 + 4u$