STATIONARY POINTS: 3

(136) The curve C has equation

$$y = x^3 + 3x^2 - 1.$$

(a) Find the coordinates and the nature of each of the stationary points of C. [6]

(b) Sketch C, indicating the coordinates of each of the stationary points. [2]

(c) Write down the number of positive real roots of the equation

$$x^3 + 3x^2 - 1 = 0.$$ [1]

June 12

(137) The curve C has equation

$$y = x^3 - 3x^2 - 9x + 14.$$

(a) Find the coordinates and the nature of each of the stationary points of C. [6]

(b) Sketch C, indicating the coordinates of each of the stationary points. [2]

Jan 10

(124) The curve C has equation

$$y = x^3 - 3x^2 - 9x + 2.$$

Find the coordinates of the stationary points of C and determine the nature of each of these stationary points. [7]

June 06

(125) The curve C has equation

$$y = 4x^3 - 12x + 3.$$

(a) Find the coordinates of the stationary points of C and determine the nature of each of these points. [7]

(b) Sketch C, indicating the coordinates of the stationary points. [3]

(c) Given that $f(x) = 4x^3 - 12x + 3$, sketch the curve $y = f(x - 1)$, indicating the coordinates of each of the stationary points. [3]

Jan 07

(126) The curve C has equation

$$y = x^3 - x^2 - x + 2.$$

Find the coordinates of the stationary points of C and determine the nature of each of these stationary points. [7]

June 07

(127) The curve C has equation

$$y = x^3 - 12x + 11.$$

(a) Find the coordinates and nature of each of the stationary points of C. [7]

(b) Sketch C, indicating the coordinates of each of the stationary points. [2]

(c) Given that the equation

$$x^3 - 12x + 11 = k$$

has only one real root, find the range of possible values for k. [2]

Jan 08