

AQA, Edexcel, OCR

A Level

A Level Mathematics

Parametric Equations

Name:

M M E

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Total Marks:

C4- Parametric Equations – Questions

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- 1) Sketch the parametric curve for the following set of equations [2]

$$x = t^2, \quad y = 5t + 1, \quad -2 \leq t \leq 2$$

- 2) Eliminate the parameter from the following set [1]

$$x = 2t^2 + 4$$

$$y = t + 1$$

- 3) A curve, C , has the parametric equations

$$x = t^3 - 6t, \quad y = t^2$$

where t is a parameter.

- i) Plot y against x for $-2 \leq t \leq 2, t \in \mathbb{Z}$ [2]

Point P has the value $t = 1$

- ii) Find the coordinates of P . [1]

A square, S , has an edge S_1 that is tangent to C at point P .

- iii) Show that the equation for this edge is $3y + 2x + 7 = 0$ [4]

The same edge intersects the curve at second point, Q . [3]

- iv) What are the coordinates of this point?

- 4) The following parametric equations

$$x = t^2 - 4t$$

$$y = t^3 - 4t$$

define a curve, C , that cross the x -axis thrice.

- i) One of the points, N , at which it crosses is $(0,0)$. Find the one where $x > 0$. [2]

From the *origin* to the N , a region, R , of the of the plane is enclosed by C and the x -axis.

- ii) Find the area of R . [4]

- 5) i) State the parameterisation of the of the circle $x^2 + y^2 = 9$ [2]

- ii) Plot this circle and indicate the starting point of motion, S , and the direction of motion as clockwise or anticlockwise. [2]