

2.3 Homework

A-Level Pure Mathematics : Year 2 Differentiation IV

*Any solution based entirely on graphical
or numerical methods is not acceptable*

Marks Available : 20

Question 1

Find a Cartesian equations of each of these curves in the form $y = f(x)$,

(i) $x = \frac{12}{t}$
 $y = t^2 + t$

(ii) $x = 4\sqrt{t}$
 $y = 7t^2$

[3, 3 marks]

(iii) $x = e^{2t}$
 $y = e^{6t} - 1$

(iv) $x = \sqrt{t+1}$
 $y = t^2$

[3, 3 marks]

Question 2

Find an equation of the form $ax^2 + by^2 = c$, where a , b and c are integer constants to be found, for the following pair of parametric equations

$$x = 35 \cos \theta^\circ$$

$$y = 20 \sin \theta^\circ$$

[4 marks]

Question 3

Show that the parametric equations

$$x = \frac{1}{t - 1}$$

$$y = \frac{1}{t + 1}$$

can be written in the form $y = \frac{x}{a + bx}$ where a and b are integers to be determined.

[4 marks]