**C1 Chapter 7: DIFFERENTIATION (AS MATHS)**

**Name: ………………………………..**

**Score: Percentage: Grade: Target grade:**

**1)** Differentiate the equations of each of the curves given below:

1. 
2. 
3. 

**2)** A curve has equation .

(a) Find . [2]

(b) Find an equation for the tangent to the curve at the point where *x* = 1. [3]

[AQA June 2006]

**3)** A curve has equation .

a) Find . [3]

b) The point P on the curve has coordinates (2, 3).

1. Show that the gradient on the curve at P is 5. [2]
2. Hence find an equation of the normal to the curve at P, expressing your answer in the form *ax + by = c*, where *a*, *b* and *c* are integers. [4]

[AQA January 2005]

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**4)** A curve, drawn from the origin O, crosses the *x*-axis at A(9, 0). Tangents to the curve at O and A meet at the point P, as shown in the diagram.

The curve, defined for *x* ≥ 0, has equation

.

a) Find .

[2]

b) (i) Find the value of  at O, and hence find the equation of the tangent at O. [2]

(ii) Show that the equation of the tangent at A(9, 0) is 2*y* = 3*x* – 27. [3]

(iii) Hence find the coordinates of P where the two tangents meet. [3]

[AQA January 2006]

**The topics that I need to study further are …**