

(C1-7.8a) Name:

### Homework Questions 8 – Equation of Tangents & Normals

1. Find the equation of the tangent to the curve  $y = 3x^2 + 5x + 2$  at the point (3,44)

$$y = 23x - 25$$

2. For the curve given below, find the gradient of the tangent at the point (4,123)

$$y = 7x^2 + 4x - 5$$

$$60$$

3. Find the equation of the tangent to the function below at the point (1,11)

$$f(x) = 8x^2 + 3x$$

$$y = 19x - 8$$

4. If a tangent cuts a curve at (2,7) and has a gradient of -2,  
What is the equation of the tangent?

$$y = -2x + 11$$

5. Find the gradient of the function at the point (2,36)

If the equation of the curve is  $f(x) = 4x^2 + 9x + 2$

$$25$$

6. What are the coordinates of the point on the curve  $y = 4 - x^2$  where the gradient of

$\frac{1}{4}$   
the normal is

$$(2,0)$$

7. Find the equation of the normals to the curve  $y = x^2 - 5$  at the point (2,-1)

$$4y = -x - 2$$

8. What is the equation of the tangent to the curve  $y = 3x^2 - 9x$  at the point where  $x=4$

$$y = 15x - 48$$

9. What is the equation of the normal to the curve  $y = x - x^2 + 2x^3$  at the point where  $x=-1$

$$9y = -x - 37$$

10. Find the equation of the normal to the curve  $y = x^2 + 5x + 1$  at the point where the tangent gradient at this point is 2

$$2y = -x - 10$$