(C1-7.3a) Name:

Homework Questions 3 – Gradient Function

1. Find $\frac{dy}{dx}$ when y equals:

a) $y = 7x + 2$

$\frac{dy}{dx} = 7$

b) $y = 5x^2 + 6x$

$\frac{dy}{dx} = 10x + 6$

c) $y = 8x^2 + 2x + 3$

$\frac{dy}{dx} = 16x + 2$

d) $y = 7x^2 + x + 2$

$\frac{dy}{dx} = 14x + 1$

e) $y = 10x^2 + 3x + 4$

$\frac{dy}{dx} = 20x + 3$

f) $y = \frac{x^2}{2} + 6x - 1$

$\frac{dy}{dx} = x + 6$

g) $y = 6x^2 + \frac{x}{2} - 2$

$\frac{dy}{dx} = 12x + 0{\cdot}5$

h) $y = 8x^2 + 4x - 3$

$\frac{dy}{dx} = 16x + 4$

i) $y = 2x^2 + 3x - 1$

$\frac{dy}{dx} = 4x + 3$

J) $y = 6x^2 + 2x + 4$

$\frac{dy}{dx} = 12x + 2$

2. Find the gradient of the following curves at the given points

a) $y = 4x^2$ at the point (2,16)

16

b) $y = 2x^2 - 3x + 1$ at the point (1,0)

1

c) $y = 5 - x^2 - 4x$ at the point (-1,8)

-2

d) $y = \frac{x^2}{2} + 5x - 6$ at the point (2,6)

7

e) $y = \frac{2x^2}{3} + 4x - 10$ at the point (3,8)

8

3. The curve $y = 2x^2 + 4x - 12$ meets the line y=4 at the points A and B

a) Find the coordinates of A and B

(2,4) (-4,4)

b) Find the gradient of the curve at the point A

-12

c) Find the gradient of the curve at the point B

12

d) Find the gradient of the line joining A to B

0