

WORKSHEET #5: DIFFERENTIATION

PART ONE : THE GRADIENT FUNCTION

NAME: _____

DATE: _____

CLASS: _____

SCORE: _____

Find the derivative of each of the following functions and write down the gradient of the curve at the specified point.

1. $y = x^2(3 - x)$ at $x = -2$

2. $y = x^2 - 4x$ at $x = 1$

3. $y = 3x^2 - 3x + 1$ at $x = 0$

4. $y = x^3 - 3x^2 + 2$ at $(3, 2)$

5. $V = 5t^4$ at $V = 20$

6. $A = 2\pi x^2 - 3x + 4$ at $x = 5$

7. $s = t^2 + \frac{1}{2} t^3$ at $t = 1$

8. $y = (2x^2 - 3)(4 - x^2)$ at $x = 5$

9. $y = \frac{5t^3 + 3t^2}{2t} + 3$ at $t = 0$

10. $y = (5x^3 - 3x^2 + 1)^2$ at $x = 1$

11. $y = [1 - (2x - 3)]^2$ at $(0, 1)$

12. $y = (x^3 + 4x^2 - 12x + 8)(3x^2 - 9x + 7)$ at $x = 1$