Average Gradient on a Curve (Grade 11)

WORKSHEET

Name: ..... Class: .....

Date: .....

MARK ____ / 25

Answer all questions. Show all your working — marks are awarded for method as well as the final answer.

1 Determine the average gradient of $f(x) = x^2$ between $x = 2$ and $x = 5$. **(2)**

2 Determine the average gradient of $f(x) = x^2 + 1$ between $x = -1$ and $x = 2$. **(2)**

3 Write down the formula for the average gradient of f between $x = a$ and $x = b$. **(2)**

4 For $f(x) = x^2$, calculate the average gradient between $x = 2$ and $x = 2{,}1$ (to two decimal places). **(3)**

5 Using the answer above, estimate the gradient of $y = x^2$ AT the point where $x = 2$. **(2)**

6 Explain why the gradient of a curve cannot be given as a single number, but the gradient of a straight line can. **(3)**

7 The average gradient of f between $x = 0$ and $x = 4$ is 0. Does this mean the graph is a horizontal line? Explain. **(3)**

8 A ball's height is $h(t) = 30t - 5t^2$ metres. Determine its average velocity between $t = 1$ and $t = 4$ seconds. **(3)**

9 What does the chord between two points on a curve become as the two points slide together? **(2)**

10 For $f(x) = 2x^2$, determine the average gradient between $x = 1$ and $x = 1 + h$, and simplify your answer. **(3)**

TOTAL: 25 marks

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