



SEKOLAH BUKIT SION

AY 2021-2022
MATHEMATICS 0580

CHAPTER TEST: DIFFERENTIATION

NAME: _____
CLASS: _____

DATE: _____
SCORE: _____/40

ANSWER ALL QUESTIONS. PROVIDE NECESSARY WORKING.

QUESTION 01

[13 marks]

Write down the first and second derivatives of each of the following functions.

FUNCTION	FIRST Derivative	SECOND Derivative
(a) $y = 3x - 5$		
(b) $y = 5x^2 - 8x + 2$		
(c) $y = 2x^3 - 6x^2 + 4x - 7$		
(d) $y = x(3x^3 - 5)$		
(e) $y = \frac{2}{5}x^{10} - \frac{1}{2}x^8 - 6$		
(f) $y = (x^2 + 5)(2x^3 - 3)$		

QUESTION 02**[3 marks]**

Find the coordinates of the point on the curve $y = 2x^2 - 5x + 1$ at which the gradient is 3.

QUESTION 03**[3 marks]**

Write down the equation of the tangent to $y = 4x^2 - 11x + 5$ at $x = 4$.

QUESTION 04**[5 marks]**

The function $f(x) = x^3 + px^2 + qx + r$ has a minimum point (3, -2) and a maximum value at $x = -1$.
Find the values of p , q and r .

QUESTION 05**[6 marks]**

Find the stationary point/s of $y = 4x^2 - 20x + 25$ and determine the nature of its stationary point/s using the first derivative test method.

QUESTION 06**[10 marks]**

- (a) Given that $y = x(x^2 - 12)$.
- (b) Determine the nature of each point using the second derivative test.
- (c) Write down the range of values of x for which y is a decreasing function.