Full Name: …….. **Date: 23 November 2024**

Short Assessment

Time Allowed: 20 minutes **Total Marks: 22**

1. Use differentiation from **first principles** to find the gradient of the curve $y = 2x^2 - 5x$ at the point P, which has coordinates (4, 12).

(4 marks)

2. Find the derivative of $y = x^2 + 3x + 4$ from **first principles**.

(4 marks)

3.

On a randomly chosen day, each of the 32 students in a class recorded the time, t minutes to the nearest minute, they spent on their homework. The data for the class is summarised in the following table.

Time, t	Number of students
10 – 19	2
20 – 29	4
30 – 39	8
40 – 49	11
50 – 69	5
70 – 79	2

(a) Estimate the values of the median and the upper quartile for this data.

(6 marks)

(b) Find the mean and the standard deviation of the times spent by the students on their homework.

(5 marks)

4. Given that,

$$y = \frac{3x^6 - 4x^3}{2x^2}$$

find $\frac{dy}{dx}$.

(3 marks)

- End of Test -