Test - Integration

Year: Year 12 · Duration: 60 minutes · /20

Name:	Date:	**Mark: /20**

Question	1	2	3	4	5	Total
marks	4	4	4	4	4	**20**
Mark						

Show your working.

Question 1 (4 marks)

Question 1 – Indefinite integration

Find (a) $\int \left(8x^3 - \frac{3}{x^2} + \sqrt{x}\right) dx$ and (b) $\int (x-3)^2\, dx$. (4 marks)

Question 2 (4 marks)

Question 2 – Finding a function

The curve with $\frac{dy}{dx} = 3x^2 - 8x + 1$ passes through $(2, 5)$. Find the equation of the curve.

Question 3 (4 marks)

Question 3 – Definite integral

Evaluate $\int_1^4 \left(\frac{6}{\sqrt{x}} + x\right) dx$.

Question 4 (4 marks)

Question 4 – Area

Find the area enclosed by the curve $y = x^2 - 6x + 8$ and the x-axis.

Question 5 (4 marks)

Question 5 – Problem: a skatepark ramp

The profile of a ramp is $y = \frac{1}{4}x^2$ for $0 \le x \le 4$ (metres). The line $y = x$ meets it at the origin and at $(4, 4)$.

a. Show that the line is above the curve between 0 and 4. (1 mark)

b. Find the area between the line and the curve. (3 marks)