

AQA, Edexcel

A Level

A Level Mathematics

C1 Integration

Name:

M M E

Mathsmadeeasy.co.uk

Total Marks: /38

1. Integrate the following functions. *Remember to include a constant of integration:*

(a) $\frac{dy}{dx} = 1.$ [2]

(b) $\frac{dy}{dx} = 2x^{\frac{1}{3}}.$ [2]

(c) $\frac{dy}{dx} = \frac{3}{4}x^3.$ [2]

(d) $\frac{dy}{dx} = x^4 + 3x + 8.$ [3]

(e) $\frac{dy}{dx} = x(x - 1).$ [3]

(f) $5x^2 + 2\frac{dy}{dx} = 10.$ [3]

(g) $\frac{dy}{dx} = 2x(x - 3)(x - 5).$ [3]

2. Consider the derivative $f'(x) = x + 3$. Find $f(x)$ using the fact that the point $(0, 1)$ lies on the curve. [4]

3. Consider the function $f'(x) = 16x^3 + 9x^2 + \frac{1}{2}$. You are given that $f(1) = -\frac{5}{2}$. Find $f(x)$. [5]

4. Consider the second derivative $f''(x) = 6x + 4$ of some cubic function $f(x)$.

(a) Find $f'(x)$. [2]

(b) You are given that $f(0) = 10$ and $f(1) = 13$, find $f(x)$. [4]

(c) Find all the stationary points of $f(x)$ and determine their nature. [5]

5. Consider the quadratic function $f(x) = 3x^2 + 2x + 4$.

(a) Calculate $\int_{-1}^2 f(x) dx$. [4]

(b) What does the quantity found in part (a) represent? [2]