



QUESTION WORKBOOK

Implicit and parametric differentiation

Differentiation · Year 12–13

6 questions · 20 marks

PRINT EDITION

SECTION A · Warm-up

A1 Differentiate y^3 with respect to x , and then the product xy . [2]

SECTION B · Standard

B1 Find the gradient of the circle $x^2 + y^2 = 100$ at the point $(6, 8)$. [4]

B2 The curve C has equation $x^2 + xy + y^2 = 7$. Find dy/dx in terms of x and y , and the gradient of C at $(1, 2)$. [4]

- B3** A curve has parametric equations $x = t^2$, $y = t^3$. Find dy/dx in terms of t , and the gradient and coordinates of the point where $t = 2$. [4]

SECTION C · Stretch

- C1** The circle has parametric equations $x = 3 \cos t$, $y = 3 \sin t$. Find dy/dx in terms of t , and evaluate it at $t = \pi/4$. [3]

- C2** Given $x = \sin y$, show that $dy/dx = 1/\sqrt{1-x^2}$. [3]