



QUESTION WORKBOOK

Differentiating powers of x

Differentiation · Year 12–13

7 questions · 20 marks

NAVY SCREEN EDITION

SECTION A · Warm-up

A1 Differentiate $y = x^5 - 3x^2 + 7$. [2]

A2 Differentiate $y = \sqrt{x}$, giving your answer without fractional indices. [2]

SECTION B · Standard

B1 Differentiate $y = 4x^3 - 2/x$. [3]

B2 Differentiate $y = 6\sqrt{x} + 3/x^2 - 5x$. [3]

B3 Differentiate $y = x^2(x^3 - 4)$. [2]

B4 Differentiate $y = (2x^3 - 5x)/x^2$. [2]

SECTION C · Stretch

C1 Given that $y = (2\sqrt{x} - 3)^2/x$ for $x > 0$, show that $dy/dx = 6x^{-3/2} - 9x^{-2}$. Hence find the exact value of x at which the curve has a stationary point. [6]