

A-Level Starter Activity



Topic: Differentiation

Chapter Reference: Pure 1, Chapter 12

8
minutes

1. Find $\frac{dy}{dx}$ when $y = x^5 + x^2$ (1)

2. Find $\frac{dy}{dx}$ when $y = 6x^3 + 5x^{-2}$ (1)

3. Find $\frac{dy}{dx}$ when $y = 3x^{-1} - 5x^{-\frac{3}{2}}$ (1)

4. Find $\frac{dy}{dx}$ when $y = (x + 1)(x + 6)$ (2)

5. Find $\frac{dy}{dx}$ when $y = \sqrt{x}(x - 4)$ (2)

6. Find $\frac{dy}{dx}$ when $y = \frac{5+\sqrt{x}}{x^2}$ (2)

Solutions

1.

$y = x^5 + x^2$ $\frac{dy}{dx} = 5x^4 + 2x$	M1
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2.

$y = 6x^3 + 5x^{-2}$ $\frac{dy}{dx} = 12x^2 - 10x^{-3}$	M1
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3.

$y = 3x^{-1} - 5x^{-\frac{3}{2}}$ $\frac{dy}{dx} = -3x^{-2} + \frac{15}{2}x^{-\frac{5}{2}}$	M1
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4.

$y = (x+1)(x+6)$ $y = x^2 + 7x + 6$	M1
$\frac{dy}{dx} = 2x + 7$	M1

5.

$y = \sqrt{x}(x-4)$ $y = x^{1.5} - 4x^{0.5}$	M1
$\frac{dy}{dx} = 1.5x^{0.5} - 4x^{-0.5}$	M1

6.

$y = \frac{5+\sqrt{x}}{x^2}$ $y = 5x^{-2} + x^{-1.5}$	M1
$\frac{dy}{dx} = -10x^{-3} - 1.5x^{-2.5}$	M1

