5.1 Differentiation of Polynomials: 10-minute Pack

AQA 8365 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Differentiate $y = x^4$ with respect to x.

(Total for Question 1 is 1 mark)

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2 Find dy/dx for each of the following curves.

(a) $y = x^3 + 5x^2 - 3x + 7$ **(2)**

(b) $y = 4x^4 - 6x^3 + x$ **(2)**

(c) $y = 3x^4 + 2x^3 - 5x + 9$ **(2)**

(Total for Question 2 is 6 marks)

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3 A curve has equation $y = 2x^2 + 3x - 7$. Calculate the gradient of the curve at the point where $x = -2$.

(Total for Question 3 is 2 marks)

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Mark scheme · 5.1 Differentiation of Polynomials: 10-minute Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

$dy/dx = 4x^3$ cao	**B1**
Answer: $dy/dx = 4x^3$	

Question 2

(a) differentiates at least two terms correctly (e.g. $3x^2$ and $10x$ seen)	**M1**
(a) $dy/dx = 3x^2 + 10x - 3$ cao	**A1**
(a) Answer: $dy/dx = 3x^2 + 10x - 3$	
(b) differentiates at least two terms correctly (e.g. $16x^3$ and $-18x^2$ seen)	**M1**
(b) $dy/dx = 16x^3 - 18x^2 + 1$ cao	**A1**
(b) Answer: $dy/dx = 16x^3 - 18x^2 + 1$	
(c) differentiates at least two terms correctly (e.g. $12x^3$ and $6x^2$ seen)	**M1**
(c) $dy/dx = 12x^3 + 6x^2 - 5$ cao	**A1**
(c) Answer: $dy/dx = 12x^3 + 6x^2 - 5$	

Question 3

differentiates to obtain $dy/dx = 4x + 3$ and substitutes $x = -2$	**M1**
gradient = -5 cao	**A1**
Answer: gradient = -5	

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