# 1.7 Pure: Differentiation: 10-minute Pack

EDEXCEL 9MA0 · Calculator allowed · about 10 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

**Answer ALL questions. Show all your working.**

**1** $y = 3x^4 - 2/x^3 + 4\sqrt{x} - 7$, for $x > 0$.

**(a)** Find $dy/dx$, writing each term with a positive or negative index or a root as appropriate. **(4)**

**(b)** Hence find the exact value of $dy/dx$ when $x = 4$, giving your answer as a single fraction in its simplest form. **(3)**

**(Total for Question 1 is 7 marks)**

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**2** Differentiate $y = x^5$ with respect to x.

**(Total for Question 2 is 1 mark)**


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# Mark scheme · 1.7 Pure: Differentiation: 10-minute Pack

## Question 1

| | |
|---|---|
| (a) attempts to differentiate at least one term of the form $ax^n$ using $ax^n \rightarrow anx^{n-1}$ | **M1** |
| (a) $3x^4 \rightarrow 12x^3$ correct | **A1** |
| (a) $-2x^{-3} \rightarrow 6x^{-4}$ (oe $6/x^4$) correct | **A1** |
| (a) $4x^{1/2} \rightarrow 2x^{-1/2}$ (oe $2/\sqrt{x}$) correct, with $-7 \rightarrow 0$ | **A1** |

**(a) Answer: $dy/dx = 12x^3 + 6x^{-4} + 2x^{-1/2}$ (oe $12x^3 + 6/x^4 + 2/\sqrt{x}$)**

| | |
|---|---|
| (b) substitutes $x = 4$ into their $dy/dx$ | **M1** |
| (b) evaluates all three terms correctly: 768, 3/128, 1 (oe, dependent on M1) | **dM1** |
| (b) cao: $dy/dx = 98435/128$ | **A1** |

**(b) Answer: 98435/128**

## Question 2

| | |
|---|---|
| $5x^4$ cao | **B1** |

**Answer: $dy/dx = 5x^4$**


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