

QQQ – Pure Year 1 – Chapter 7 – Polynomials (Version 1)

Total Marks: 24

(24 = Platinum, 22 = Gold, 19 = Silver, 16 = Bronze)

1. A student is looking for factors of the polynomial $f(x)$

They suggest that $(x - 2)$ is a factor of $f(x)$

The method they use to check this suggestion is to calculate $f(-2)$

They correctly calculate that $f(-2) = 0$

They conclude that their suggestion is correct.

(a) Make **one** comment about the student's **method**.

[1 mark]

(b) Make **two** comments about the student's **conclusion**.

[2 marks]

(Total 3 marks)

AQA June 2024 Paper 1 Q5

2. Simplify fully $\frac{2x^3 + x^2 - 7x - 6}{x^2 - x - 2}$.

[4]

(Total 4 marks)

OCR A October 2020 Paper 2 Q2

3. Show that the expression $3x^3 + x^2 - 6x - 5$ can be written in the form

$(x + 2)(ax^2 + bx + c) + d$ where a, b, c and d are constants to be determined.

[5]

(Total 5 marks)

OCR MEI June 2023 Paper 1 Q6

4. It is given that $(x + 1)$ and $(x - 3)$ are two factors of $f(x)$, where

$$f(x) = px^3 - 3x^2 - 8x + q$$

(a) Find the values of p and q .

[3 marks]

(b) Fully factorise $f(x)$.

[2 marks]

(Total 5 marks)

AQA June 2019 Paper 1 Q3

5.

$$f(x) = 2x^3 + 5x^2 + 2x + 15$$

(a) Use the factor theorem to show that $(x + 3)$ is a factor of $f(x)$. **(2)**

(b) Find the constants a , b and c such that

$$f(x) = (x + 3)(ax^2 + bx + c)$$

(2)

(c) Hence show that $f(x) = 0$ has only one real root. **(2)**

(d) Write down the real root of the equation $f(x - 5) = 0$ **(1)**

(Total 7 marks)