



Algebra and Functions

Questions

Suitable for:

Pearson Edexcel International A-Level (iAL) — Pure Mathematics 2



Question 1

Divide $2x^3 + 3x^2 - 5x + 1$ by $(x - 2)$, giving your answer in the form

$$2x^3 + 3x^2 - 5x + 1 = (x - 2)Q(x) + R$$

where $Q(x)$ is a quadratic expression and R is a constant.

(4 marks)

Total for question = 4 marks



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Question 2

$$f(x) = 2x^3 - 5x^2 - 4x + 3$$

(a) Show that $(x - 3)$ is a factor of $f(x)$.

(1 marks)

(b) Hence fully factorise $f(x)$.

(3 marks)

(c) Write down all the solutions of $f(x) = 0$.

(1 marks)

Total for question = 5 marks





Question 3

$$f(x) = 3x^3 - 2x^2 + 4x - 1$$

Use the Remainder Theorem to find the remainder when $f(x)$ is divided by $(x + 2)$.

(2 marks)

Total for question = 2 marks





Question 4

$f(x) = x^3 + kx^2 - 7x + 6$, where k is a constant.

Given that $(x - 2)$ is a factor of $f(x)$,

(a) find the value of k ,

(2 marks)

(b) fully factorise $f(x)$,

(3 marks)

(c) hence solve $f(x) = 0$.

(1 marks)

Total for question = 6 marks





Question 5

$f(x) = 2x^3 + ax^2 + bx - 6$, where a and b are constants.

Given that $(x - 1)$ is a factor of $f(x)$ and that the remainder when $f(x)$ is divided by $(x + 3)$ is -12 ,

(a) find the values of a and b ,

(4 marks)

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

(3 marks)

Total for question = 7 marks





Question 6

$$g(x) = x^3 - x^2 - 14x + 24$$

(a) Use the Factor Theorem to show that $(x - 2)$ is a factor of $g(x)$.

(1 marks)

(b) Hence fully factorise $g(x)$.

(3 marks)

(c) Solve $g(x) = 0$.

(1 marks)

Total for question = 5 marks

