2.1 Polynomials

Question Paper

Course	Edexcel IAL Maths: Pure 2
Section	2. Algebra & Functions
Topic	2.1 Polynomials
Difficulty	Easy

Time allowed: 50

Score: /43

Percentage: /100

Question 1

Use the factor theorem to verify that $(x - 2)$ is a factor of $x^3 - x^2 - 14x + 24$.
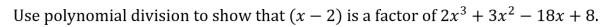
[2 marks]

Question 2

Divide $x^3 + 6x^2 + 11x + 6$ by $(x + 2)$.

[4 marks]

Question 3

Given $f(x) = x^3 - 5x^2 - 2x + 24$ has a root at $x = 3$, fully factorise f(x).

[6 marks]

Question 4

Use polynomial division to show that $(x - 2)$ is a factor of $2x^3 + 3x^2 - 18x + 8$.

[4 marks]

Question 5

Given $x = -2$ is a root of the function $f(x) = x^3 - 3x^2 - 8x + 4$, fully factorise $f(x)$.

[4 marks]

Question 6

Given that $(x - 4)$ is a factor of $x^3 - kx^2 - 4x + 16$, find the value of k.
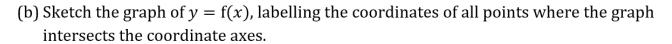
[3 marks]

Question 7

Given that $x = \frac{1}{2}$ is a root of the function $f(x) = 2x^3 + (p^2 + 1)x^2 - 11x + 4$, find the possible values of p.

[4 marks]

Question 8

(a) Given that $(x + 1)$ is a factor of $f(x) = x^3 - 5x^2 + 3x + 9$, fully factorise $f(x)$.

[4 marks]

Question 8

(b) Sketch the graph of $y = f(x)$, labelling the coordinates of all points where the graph intersects the coordinate axes.

[3 marks]

Question 9

Find the remainder when $x^3 - 7x - 6$ is divided by $(x + 4)$.

[4 marks]

Question 10

The function $f(x)$ is given by $f(x) = x^4 + ax^3 - 13x^2 - 38x - 4b$, where a and b are constants.

Given that both $(x + 1)$ and $(x + 2)$ are factors of $f(x)$, find the values of a and b.

[5 marks]