

Modulus Function

Question Paper 3

Level	International A Level
Subject	Maths
Exam Board	CIE
Topic	Algebra
Sub Topic	Modulus Function
Booklet	Question Paper 3

Time Allowed: 60 minutes

Score: /50

Percentage: /100

Grade Boundaries:

A*	A	B	C	D	E	U
>85%	77.5%	70%	62.5%	57.5%	45%	<45%

- 1 Solve the equation $|3x + 4| = |2x + 5|$. [3]
- 2 Solve the inequality $|x + 1| > |x - 4|$. [3]
- 3 The polynomial $3x^3 + 2x^2 + ax + b$, where a and b are constants, is denoted by $p(x)$. It is given that $(x - 1)$ is a factor of $p(x)$, and that when $p(x)$ is divided by $(x - 2)$ the remainder is 10.
- (i) Find the values of a and b . [5]
- (ii) When a and b have these values, solve the equation $p(x) = 0$. [4]
- 4 Solve the inequality $|3x + 1| > 8$. [3]
- 5 The polynomial $x^3 + 4x^2 + ax + 2$, where a is a constant, is denoted by $p(x)$. It is given that the remainder when $p(x)$ is divided by $(x + 1)$ is equal to the remainder when $p(x)$ is divided by $(x - 2)$.
- (i) Find the value of a . [3]
- (ii) When a has this value, show that $(x - 1)$ is a factor of $p(x)$ and find the quotient when $p(x)$ is divided by $(x - 1)$. [3]
- 6 Solve the inequality $|2x - 3| > 5$. [3]
- 7 Solve the inequality $|2x - 1| < |x + 4|$. [4]

8 Solve the inequality $|2x + 3| < |x - 3|$. [4]

9 Solve the inequality $|x + 3| > |2x|$. [4]

10 The polynomial $ax^3 + bx^2 - 5x + 2$, where a and b are constants, is denoted by $p(x)$. It is given that $(x + 1)$ and $(x - 2)$ are factors of $p(x)$.

(i) Find the values of a and b . [5]

(ii) When a and b have these values, find the other linear factor of $p(x)$. [2]

11 Solve the inequality $|3x + 2| < |x|$. [4]