

Modulus Function

Question Paper 1

Level	International A Level
Subject	Maths
Exam Board	CIE
Topic	Algebra
Sub Topic	Modulus Function
Booklet	Question Paper 1

Time Allowed: 50 minutes

Score: /41

Percentage: /100

Grade Boundaries:

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

- 1 (i) Solve the equation $|3x + 4| = |3x - 11|$. [3]
- (ii) Hence, using logarithms, solve the equation $|3 \times 2^y + 4| = |3 \times 2^y - 11|$, giving the answer correct to 3 significant figures. [2]
- 2 Solve the equation $|3x - 1| = |2x + 5|$. [3]
- 3 Solve the inequality $|3x - 2| \geq |x + 4|$. [4]
- 4 (i) Solve the equation $|x + 2| = |x - 13|$. [2]
- (ii) Hence solve the equation $|3^y + 2| = |3^y - 13|$, giving your answer correct to 3 significant figures. [2]
- 5 Solve the inequality $|x + 1| < |3x + 5|$. [4]
- 6 (i) The polynomial $x^3 + ax^2 + bx + 8$, where a and b are constants, is denoted by $p(x)$. It is given that when $p(x)$ is divided by $(x - 3)$ the remainder is 14, and that when $p(x)$ is divided by $(x + 2)$ the remainder is 24. Find the values of a and b . [5]
- (ii) When a and b have these values, find the quotient when $p(x)$ is divided by $x^2 + 2x - 8$ and hence solve the equation $p(x) = 0$. [4]

- 7 Solve the equation $|2^x - 7| = 1$, giving answers correct to 2 decimal places where appropriate. [5]
- 8 Solve the inequality $|x - 8| > |2x - 4|$. [4]
- 9 Solve the inequality $|x - 2| \geq |x + 5|$. [3]