

# Modulus Function

## Question Paper 4

<b>Level</b>	International A Level
<b>Subject</b>	Maths
<b>Exam Board</b>	CIE
<b>Topic</b>	Algebra
<b>Sub Topic</b>	Modulus Function
<b>Booklet</b>	Question Paper 4

**Time Allowed:** 58 minutes

**Score:** /48

**Percentage:** /100

**Grade Boundaries:**

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

- 1 Solve the inequality  $|x - 3| > |2x|$ . [4]
- 2 Solve the inequality  $|3x - 1| < 2$ . [3]
- 3 (i) Solve the inequality  $|y - 5| < 1$ . [2]  
(ii) Hence solve the inequality  $|3^x - 5| < 1$ , giving 3 significant figures in your answer. [3]
- 4 Solve the inequality  $|x - 3| > |x + 2|$ . [4]
- 5 Solve the inequality  $|2x - 1| > |x|$ . [4]
- 6 Solve the inequality  $|2x - 7| > 3$ . [3]
- 7 The polynomial  $x^3 + 2x^2 + 2x + 3$  is denoted by  $p(x)$ .  
(i) Find the remainder when  $p(x)$  is divided by  $x - 1$ . [2]  
(ii) Find the quotient and remainder when  $p(x)$  is divided by  $x^2 + x - 1$ . [4]
- 8 Solve the inequality  $|x| > |3x - 2|$ . [4]

- 9 Solve the inequality  $|x + 1| > |x|$ . [3]
- 10 Find the set of values of  $x$  satisfying the inequality  $|8 - 3x| < 2$ . [3]
- 11 Solve the inequality  $|x - 4| > |x + 1|$ . [4]
- 12 The cubic polynomial  $2x^3 + ax^2 + b$  is denoted by  $f(x)$ . It is given that  $(x + 1)$  is a factor of  $f(x)$ , and that when  $f(x)$  is divided by  $(x + 2)$  the remainder is  $-5$ . Find the values of  $a$  and  $b$ . [5]