

CIE  
Pure Mathematics 2  
分类真题  
2020-2022 册

A Level Clouds 出品

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# **Chapter 1**

Algebra

**Q1: 9709/22/M20**

- 2 (a) Find the quotient when  $4x^3 + 17x^2 + 9x$  is divided by  $x^2 + 5x + 6$ , and show that the remainder is 18. [3]

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- (b) Hence solve the equation  $4x^3 + 17x^2 + 9x - 18 = 0$ . [3]

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**Q2: 9709/21/S20**

- 2 The polynomial  $p(x)$  is defined by

$$p(x) = 6x^3 + ax^2 + 9x + b,$$

where  $a$  and  $b$  are constants. It is given that  $(x - 2)$  and  $(2x + 1)$  are factors of  $p(x)$ .

Find the values of  $a$  and  $b$ .

[5]

**Q3: 9709/21/S20**

- 4 (a) Sketch, on the same diagram, the graphs of  $y = |3x + 2a|$  and  $y = |3x - 4a|$ , where  $a$  is a positive constant.

Give the coordinates of the points where each graph meets the axes.

[3]

- (b) Find the coordinates of the point of intersection of the two graphs.

[3]

- (c) Deduce the solution of the inequality  $|3x + 2a| < |3x - 4a|$ .

[1]

**Q4: 9709/22/S20**

- 5 (a) Sketch, on the same diagram, the graphs of  $y = |2x - 3|$  and  $y = 3x + 5$ . [2]

- (b) Solve the inequality  $3x + 5 < |2x - 3|$ . [3]

**Q5: 9709/21/W20**

- 2 The polynomial  $p(x)$  is defined by

$$p(x) = x^3 + ax^2 + bx + 16,$$

where  $a$  and  $b$  are constants. It is given that  $(x + 2)$  is a factor of  $p(x)$  and that the remainder is 72 when  $p(x)$  is divided by  $(x - 2)$ .

Find the values of  $a$  and  $b$ .

[5]

**Q6: 9709/22/W20**

- 3 (a) Sketch, on a single diagram, the graphs of  $y = \left| \frac{1}{2}x - a \right|$  and  $y = \frac{3}{2}x - \frac{1}{2}a$ , where  $a$  is a positive constant. [2]

- (b) Find the coordinates of the point of intersection of the two graphs. [3]

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- (c) Deduce the solution of the inequality  $\left| \frac{1}{2}x - a \right| > \frac{3}{2}x - \frac{1}{2}a$ . [1]

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**Q7: 9709/22/M21**

- 1 (a) Sketch, on the same diagram, the graphs of  $y = |3x - 5|$  and  $y = x + 2$ . [2]

- (b) Solve the equation  $|3x - 5| = x + 2$ . [3]

**Q8: 9709/21/S21**

- 1 Solve the inequality  $|3x - 7| < |4x + 5|$ .

[4]

**Q9: 9709/22/S21**

- 2 The solutions of the equation  $5|x| = 5 - 2x$  are  $x = a$  and  $x = b$ , where  $a < b$ .

Find the value of  $|3a - 1| + |7b - 1|$ .

[5]