

- 3 The polynomial  $2x^3 + ax^2 - 11x + b$  is denoted by  $p(x)$ . It is given that  $p(x)$  is divisible by  $(2x - 1)$  and that when  $p(x)$  is divided by  $(x + 1)$  the remainder is 12.

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

[5]

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page, typical of notebook or legal stationery. There are no margins, text, or other markings on the page.

- 2** The polynomial  $ax^3 + 5x^2 - 4x + b$ , where  $a$  and  $b$  are constants, is denoted by  $p(x)$ . It is given that  $(x + 2)$  is a factor of  $p(x)$  and that when  $p(x)$  is divided by  $(x + 1)$  the remainder is 2.

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

[5]

[illegible]

- 3** The polynomial  $ax^3 + x^2 + bx + 3$  is denoted by  $p(x)$ . It is given that  $p(x)$  is divisible by  $(2x - 1)$  and that when  $p(x)$  is divided by  $(x + 2)$  the remainder is 5.

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

[5]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

- 3** The polynomial  $2x^3 + ax^2 + bx + 6$ , where  $a$  and  $b$  are constants, is denoted by  $p(x)$ . When  $p(x)$  is divided by  $(x + 2)$  the remainder is  $-38$  and when  $p(x)$  is divided by  $(2x - 1)$  the remainder is  $\frac{19}{2}$ .

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

[5]

[illegible]

- 5** The polynomial  $ax^3 - 10x^2 + bx + 8$ , where  $a$  and  $b$  are constants, is denoted by  $p(x)$ . It is given that  $(x - 2)$  is a factor of both  $p(x)$  and  $p'(x)$ .

**(a)** Find the values of  $a$  and  $b$ .

[5]

[illegible]

**(b)** When  $a$  and  $b$  have these values, factorise  $p(x)$  completely.

[3]

This image shows a full page of white paper with horizontal dotted lines, typical of primary school writing paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

- 1** Find the quotient and remainder when  $6x^4 + x^3 - x^2 + 5x - 6$  is divided by  $2x^2 - x + 1$ . [3]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

- 1** Find the quotient and remainder when  $2x^4 + 1$  is divided by  $x^2 - x + 2$ . [3]

[illegible]

**2** Find the quotient and remainder when  $2x^4 - 27$  is divided by  $x^2 + x + 3$ . [3]

This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dotted lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, leaving ample room for writing practice. There is no text or other markings on the page.

- 2 The polynomial  $2x^3 - x^2 + a$ , where  $a$  is a constant, is denoted by  $p(x)$ . It is given that  $(2x + 3)$  is a factor of  $p(x)$ .

(a) Find the value of  $a$ . [2]

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(b) When  $a$  has this value, solve the inequality  $p(x) < 0$ . [4]

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- 3** The polynomial  $2x^4 + ax^3 + bx - 1$ , where  $a$  and  $b$  are constants, is denoted by  $p(x)$ . When  $p(x)$  is divided by  $x^2 - x + 1$  the remainder is  $3x + 2$ .

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

[5]

This image shows a full page of white paper with horizontal dashed lines, typical of primary-ruled notebook paper. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.