

## Worksheet: Polynomials

IGCSE · Class 9 · Mathematics · 18 questions · 43 marks

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 43

**Q1.** Which of the following is a polynomial: (a)  $x + 3$ , (b)  $1/x + 5$ , (c)  $2x^3 - 7x + 4$ , (d)  $\sin(x) + 1$ ? [1 mark]

**Q2.** Find the degree of the polynomial  $4x^2 - 7x^2 + 6$ . [1 mark]

**Q3.** Find  $p(3)$  if  $p(x) = 2x^2 - 5x + 1$ . [1 mark]

**Q4.** Is  $x = 2$  a zero of  $p(x) = x^3 + 2x^2 - 5x - 6$ ? [1 mark]

**Q5.** Expand  $(3x + 4)^2$  using an identity. [1 mark]

**Q6.** Without computing, find  $102 \times 98$  using an identity. [1 mark]

**Q7.** Find the remainder when  $p(x) = x^3 + 3x^2 - 5x + 7$  is divided by  $(x - 2)$ . [2 marks]

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**Q8.** Find the remainder when  $p(x) = 3x^3 - 2x^2 + 4x - 1$  is divided by  $(3x - 1)$ . [2 marks]

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**Q9.** Determine whether  $(x + 1)$  is a factor of  $p(x) = x^3 - 2x + 2$ . [2 marks]

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**Q10.** Factorise  $6x^2 + 11x - 10$  by splitting the middle term. [3 marks]

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**Q11.** Factorise  $25x^2 - 49y^2$  using an identity. [2 marks]

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**Q12.** Factorise  $8x^3 + 27$ . [3 marks]

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**Q13.** Expand  $(2x - 3y)^3$ . [3 marks]

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**Q14.** Factorise  $x^3 - 6x^2 + 11x - 6$  completely. [4 marks]

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**Q15.** If  $a + b + c = 0$ , find the value of  $a^3 + b^3 + c^3 - 3abc$ . [4 marks]

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**Q16.** If  $a + b = 5$  and  $ab = 6$ , find  $a^3 + b^3$  without solving for  $a, b$ . [4 marks]

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**Q17.** If  $(x - 2)$  and  $(x + 1)$  are both factors of  $p(x) = x^3 + ax^2 + bx - 6$ , find  $a$  and  $b$ . [4 marks]

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**Q18.** Find all integer zeros of  $p(x) = x^2 - 5x + 4$ . [4 marks]

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