Elliott Hudson College

Algebraic expressions

AS Pure Mathematics (Year 1) – Unit P1

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Key Information

Key Formulae:

$$x^a \times x^b = x^{a+b}$$
$$x^a \div x^b = x^{a-b}$$
$$(x^a)^b = x^{ab}$$
$$x^{-n} = \frac{1}{x^n}$$
$$x^{\frac{1}{n}} = \sqrt[n]{x}$$
$$a^2 - b^2 = (a-b)(a+b)$$

Key Terms:

- **Expanding Brackets:** Multiplying brackets out
- **Factorising Brackets:** Putting expressions back into brackets
- **Surd:** A root of a number which can't be written as a whole number or fraction
- **Rationalising Denominator:** Removing the surd from the bottom of the fraction

Solution Bank:

Links to the Big Picture

P1. Algebraic expressions

- P1.1 Index Laws
- P1.2 Expanding Brackets
- P1.3 Factorising
- P1.4 Negative and fractional indices
- P1.5 Surds
- P1.6 Rationalising Denominators

Develops:

- GCSE algebraic manipulation

Leads to:

- P2 – Quadratics
- P6 – Algebraic Methods
- P9 – Integration
- P12 – Differentiation
- P13 – Integration

Exam Question

a Write $\sqrt{45}$ in the form $a\sqrt{5}$, where a is an integer. **(1 mark)**

b Express $\dfrac{2(3+\sqrt{5})}{(3-\sqrt{5})}$ in the form $b+c\sqrt{5}$, where b and c are integers. **(5 marks)**