**Core Pure 1**

**Roots of Polynomials**

*Course Overview*

1. Use relationships between coefficients and roots of a quadratic, cubic or quartic equation.

2. Find the value of expressions based on the roots of a polynomial.

3. Find the new polynomial when the roots undergo a linear transformation.



**Roots of Polynomials**

The purpose of this chapter is to understand the underlying relationship between the **roots** of a polynomial, and the **coefficients** of each term.

**Roots of Quadratics**

If and are the roots of a quadratic then

This pattern generalises to higher order polynomials which will be discussed further later on.

**Quadratic Example**

**The roots of the quadratic equation are and . Without solving the equation, find the values of:**

**(a)**

**(b)**

**(c)**

**(d)**

***Question***

**The roots of the quadratic equation are and . Without solving the equation, find the values of:**

**(a)**

**(b)**

**(c)**

**(d)**

**Example**

**The roots of a quadratic equation are and . Find integer values for and .**

***Test Your Understanding***

1. **For the quadratic , find:**

1. **The sum of the roots.**
2. **The product of the roots.**

2. **If the roots of a quadratic equation are and , determine integer values for .**

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