Lower 6 Chapter 7

Algebraic Methods

Chapter Overview

1. Algebraic Fractions

2. Algebraic Long Division

3. Factor Theorem

4. Proof





Simplifying Algebraic Fractions

Examples

1. 2.

3. 4.

Exercise 7A Page 138

Algebraic Long Division

Examples

1.

2.

Test your understanding

1. Find the remainder when is divided by .

2. Divide by .

Exercise 7B Page 141

The Factor Theorem

Examples

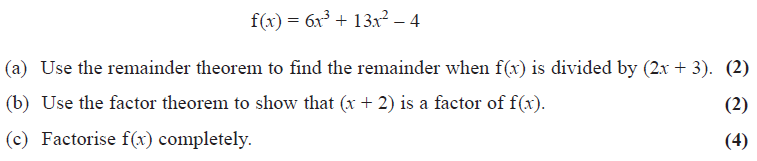
1. Show that is a factor of .

2. Fully factorise .

Using the factor theorem to find unknown coefficients:

1. Given that is a factor of , determine the value of .

Test your understanding



2. Given that is a factor of , determine the value of .

Extension

1. *[MAT 2006 1E]* The cubic has both and has factors. Determine the values of and .

2. [MAT 2009 1I] The polynomial has as a factor

1. for no values of ;
2. for only;
3. for only;
4. for and only.

The **remainder** **theorem** states that if is divided by , the remainder is . This similarly works whenever makes the divisor 0.

(No longer required for A Level)

3. [MAT 2013 1G] Let be an integer and be the polynomial

What is the remainder, in terms of , when is divided by ?

Exercise 7C Page 145