**7A Cancelling Algebraic Fractions**

1. Simplify the following fractions

**7B Polynomial Division**

1. Divide x3 + 2x2 – 17x + 6 by (x – 3)
2. Given that , write in the form:

1. Find the remainder when is divided by

**7C The Factor Theorem**

1. Show that is a factor of by:
2. Algebraic division
3. The factor theorem
4. Fully factorise
5. Hence, sketch the graph of

x

y

1. Given that (x + 1) is a factor of 4x4 – 3x2 + a, find the value of a.

**7D Algebraic Proof**

1. Prove that:
2. Prove that if is a factor of then
3. Prove that , and are the vertices of a right-angled triangle.
4. The equation , where k is a constant, has no real roots. Prove that k satisfies the inequality .

**7E Proof by Exhaustion, Counter-Example & Jottings**

1. Prove that all square numbers are either a multiple of 4, or 1 more than a multiple of 4
2. Prove that the following statement is not true:

“The sum of two consecutive prime numbers is always even”

1. Prove that for all positive values of x and y: