**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: