QT Algebraic Proof

1. Show algebraically that the sum of any 3 consecutive even numbers is always a multiple of 6.

2. Prove that $(3n + 1)^2 - (3n - 1)^2$ is a multiple of 4, for all positive integer values of n.

3. Prove algebraically that the difference between the squares of any two consecutive integers is equal to the sum of these two integers.

4. Prove algebraically that the sum of the squares of any 2 odd positive integers is always even.

5. $5(x - c) = 4x - 5$ where c is an integer. Prove that x is a multiple of 5.