1. Prove the following: “If \( n \) is an even integer, then \( n^2 - 2 \) is also even”. (Hint: Any even integer can be written as \( 2k \) for some integer \( k \). Likewise, any odd integer can be written as \( 2k + 1 \).

2. Find the value of the sum \( \sum_{i=0}^{4} (i + 1)^2 \)

3. Give a recursive definition of the sequence \( \{a_n\}, n = 0, 1, 2, \ldots \) if \( a_n = 6n - 3 \)

4. Write your recursive definition in #3 as a recursive algorithm.