For this assignment, assume that we are working in the universe of the natural numbers \( N = \{0, 1, 2, \ldots \} \).

1. Convert each of the following true statements into logical expressions. Your statements should be self-contained and should only involve basic logic and arithmetic operations. (Make sure all of your variables are bound by a quantifier!)
   (a) 9 is odd and a square number.
   (b) A natural number is odd if and only if its square is odd.
   (c) No square number is one less than a multiple of 7.
   (d) A natural number can only be written as a sum of three square numbers if it is not one less than a multiple of 8.

2. Translate each of the following logical statements into a sensible English sentence, and either prove or disprove it.
   (a) \( \forall n (n > 0 \rightarrow n^2 < 100n) \).
   (b) \( \forall n (\exists a (n = 6a) \rightarrow \exists b (n = 3b) \land \exists c (n = 2c)) \).
   (c) \( \exists n \exists m (n^2 = 3m - 1) \).