Math 8 - Home Work 1

Due: Monday April 6, 2009

Explain why the following statements are true. (You should try to prove that they are true, as best you can. These problems will be graded based on effort.)

1. The sum of any two odd numbers is even.
2. None of the numbers $10, 100, 1000, \ldots$ etc. is divisible by 7.
3. Consider the sequence of perfect squares $1, 4, 9, 16, 25, \ldots$. If one takes the differences between consecutive terms in this sequence, one obtains all the odd natural numbers starting at 3: $4 - 1 = 3, 9 - 4 = 5, 16 - 9 = 7$, etc.
4. Given a 2-digit number ab (here, a and b are integers between 0 and 9 denoting the digits of the number) we can reverse the digits to get another 2-digit number ba, and the sum $ab + ba$ is always a multiple of 11.

Do Problem 11 on p. 38. (Remember that you are not asked if the theorems are true, but only if the proofs are valid. Hint: none of the proofs are perfect.)