Math 301
Quiz 8

Show all work in a neat and organized fashion. Clearly indicate your answers.
10 points possible.

1. (4 pts.) A student is asked to prove that the difference of any rational number and any irrational number is irrational. The student begins: "Suppose, to the contrary, that the difference of any rational number and any irrational number is rational. We must deduce a contradiction." Fix the beginning (but don't finish the proof).

2. (6 pts.) Use the principle of mathematical induction to prove that for all positive integers n,

$$1 + 5 + 9 + 13 + \cdots + (4n - 3) = n(2n - 1).$$

Typeset by $\mathcal{A}\mathcal{M}\mathcal{S}$-TEX