Name: ____________________

Pid: ____________________

1. Show that if $a, b \in \mathbb{Z}$, then $a^2 - 4b + 2 \neq 0$.

Solution:

2. Show that there are irrational numbers a and b such that a^b is rational.

Solution:

3. We denote by $\{0,1\}^n$ sequences of 0's and 1's of length n. Show that it is possible to order elements of $\{0,1\}^n$ so that two consecutive strings are different only in one position.

Solution:

4. Let us define $n!$ as follows: $1! = 1$ and $n! = (n-1)! \cdot n$. Show that $n! \geq 2^n$ for any $n \geq 4$.

Solution: