Name (Last, First):

Open notes, open book.

1. [**4 Pts**] Prove, using a direct proof, that if m is even, then $7m + 2$ is even.

2. [**4 Pts**] Consider the statement: If $x \geq 5$ or $x \leq -5$ then $x^2 \geq 25$. To prove this **by cases**, state what your cases would be. You do not need to prove them.

3. [**4 Pts**] Consider the same statement: If $x \geq 5$ or $x \leq -5$ then $x^2 \geq 25$. To prove this **by contrapositive**, state what you would need to prove. You do not need to prove it.

4. [**4 Pts**] Consider the statement: If a is a non-zero rational and b is irrational, then a/b is irrational. State everything you would need to assume, to prove this **by contradiction**. You do not need to prove it.