Names: _____

COMPSCI 250 Discussion #1: What is a Proof?
Group Response Sheet

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Writing Exercises:

1. Prove that if x is an even natural, x's predecessor (if it has one) is odd.

2. Prove that if x is an odd natural, x's predecessor is even.

3. Prove that if x's predecessor is odd, then x is even.

4. Prove that if x's predecessor is even, then x is odd.

5. Prove that every natural is either odd or even. (**Hint:** By the Least Number Axiom, if any natural is *neither* odd *nor even*, there's a least such natural. Could it be 0? If not, what about its predecessor? Use the results of (1) – (4) to get a contradiction.)

6. Prove that no natural is both odd and even. (Similar to (5) – get a contradiction by assuming some natural is both.)