Special assignment: Proofs

November 6, 2024

This four exercises are due on Thursday November 14 on Gradescope.

1. If n is an integer prove that $n^2 + 3n + 2$ is even.

2. Let n be an integer. Prove that if $3n + 12$ is even, then n is even.

3. Let A, B be sets. Prove that if $A^c \cup B = U$ (the universe). Then $A \subseteq B$. Hint: $x \in U$ is always true.

4. Let A, B be sets. Prove that if $A \subseteq B$, then $A \cap B^c = \emptyset$. Hint: Reason by contradiction.

If you don't know how to start I recommend reading Grimaldi's sections 2.5 and 3.2.