Please write your solutions on a different piece of paper. Please refer to the course syllabus for a detailed explanation of how you should write homework solutions and how they will be graded.

Section 6.2

6.21 Prove that $4 \mid (5^n - 1)$ for every nonnegative integer $n$.

6.24 Prove Bernoulli’s Identity: For every real number $x > -1$ and every positive integer $n$, 

$$(1 + x)^n \geq 1 + nx.$$ 

6.29 Prove that if $A_1, A_2, \ldots, A_n$ are any $n \geq 2$ sets, then

$$A_1 \cap A_2 \cap \cdots \cap A_n = \overline{A_1} \cup \overline{A_2} \cup \cdots \cup \overline{A_n}.$$