

Homework

due on Tuesday, February 15

Read carefully sections 2.4 and 4.1 in the book. Solve the following problems.

Problem 1. Write a detailed proof of the following result. You can use the results proved in class.

Theorem. If A is a bounded above set of integers then A has a largest element.

Problem 2. Let $a > -1$ be any number. Prove by induction on n that $(1 + a)^n \geq 1 + na$ for every integer $n \geq 0$. Prove that if $a \neq 0$ and $n > 1$ then \geq can be replaced with $>$.

Problem 3. Prove that $3|(7^n + 2)$ for every natural number n using the minimum principle.