Math 441 - Homework 3

- 1. Use induction to prove: If 1 + x > 0, then $(1 + x)^n \ge 1 + nx$ for all $n \in \mathbb{N}$.
- 2. Prove that a set with n elements has 2^n subsets. Hint: use induction.
- 3. Show that A = (0, 1) and B = [0, 1] are equinumerous by describing a specific bijection between the two sets. (Hint: express your bijection using two pieces, one for irrational numbers and one for rational numbers. See problem 8.3(b) and the hint on page 367.)