MATH 302 Discrete Mathematics
Assignment 5. Due on Wednesday, March 2, 2016

Read: Sections 2.3.
Definition: Write down the definitions for the following terms. [5 points]
- a function from $A$ to $B$
- a function is one-to-one
- a function is onto
- inverse function of $f$ when $f$ is one-to-one
- geometric progression and arithmetic progression

Problems to be graded: [10 points]
§2.3/ 15, 22, 34, 35, 38, 44, 45, 47

Also do the following problems:
Let $g$ be a function from the set $A$ to the set $B$ and let $f$ be a function from the set $B$ to the set $C$. Let $h$ be composition of $f$ and $g$, i.e., $h = f \circ g$.

1. Prove that if $h$ is one-to-one, then $g$ must be one-to-one.
   Give an example to show that $f$ is not necessarily one-to-one.

2. Prove that if $h$ is onto, then $f$ is onto.
   Give an example to show that $g$ is not necessarily onto.

Practice problems:
§2.3/ 1, 2, 5, 8, 10, 12, 23, 40, 42, 43.