DEFINITION: A group $(G, \circ)$ is a set G together with a binary operation $\circ$ on G that satisfies the following three requirements:

(i) The operation $\circ$ is associative. That is, $(a \circ b) \circ c \; = \; a \circ (b \circ c)$ for all $a, \; b, \; c \in G$.

(ii) There exists an element $e \in G$ such that $e \circ a = a$ and $a \circ e = a$ for all $a \in G$. The element e is called the *identity element* of G.

(iii) For each element $a \in G$, there exists an element $b \in G$ such that $a \circ b = e$ and $b \circ a = e$. The element b is called the *inverse* of a and is usually denoted by a^{-1}.

Assignment 1 (due on Friday, January 18th)

Section 3.4: Problems 2, 6, 7, 8, 10, 15, 25, 26, 31, 40, 44, 45