숙제 1

Section 3: 26, 27, 33

Section 4: 29, 30, 31, 32, 37, 39

Section 5: 34, 42, 49, 57

Section 6: 48, 52, 55

Section 8: 12, 44, 45

(1) Show that $\langle \mathbb{Z}, + \rangle \simeq \langle n\mathbb{Z}, + \rangle$.

(2) Let $U = \{z \mid\!\mid z \mid\!\!= 1\} \subseteq \mathbb{C}^*, V = \{z \mid\!\mid z \mid\!\!= 2\} \subseteq \mathbb{C}^*$. Define binary operation $*$ on V such that $\langle V, * \rangle$ is a group and $\langle U, \cdot \rangle \simeq \langle V, * \rangle$.

(3) For the group G, let $Aut(G) \equiv \{\sigma \mid \sigma : G \to G \text{ is an isomorphism } \}$.

(a) Show that $\langle AutG), \circ \rangle$ is a group, where $\circ$ denotes the composition.

(b) Find $\mathbb{Z}_{12}$.