Assignments, January 14

1. (1 pt) Compute the Cayley table for Z_5.
2. (1 pt) Compute the Cayley table for $\{1, -1, i, -i\} \subset \mathbb{C}$ under the operation of ordinary complex number multiplication.
3. (1 pt) Is $\div$ an associative operation on $\mathbb{R}^* = \{r \in \mathbb{R} \mid r \neq 0\}$?
4. (2 pts) Show that $(\mathbb{Q}_+, \times)$ forms a group. ($\mathbb{Q}_+ = \{q \in \mathbb{Q} \mid q > 0\}$)
5. (2 pts) Show that the subset $\{0\}$ of $(\mathbb{Z}, +)$ is a group itself.
6. (3 pts) Show that the above is the only finite subset of $(\mathbb{Z}, +)$ that is a group. (HINT: consider $\{0, n\}$ as a place to start. Why is this not a group?)