

1. Let k and n be nonnegative integers, and suppose $k|n$. Prove that $\mathbb{Z}_n/\langle k \rangle \approx \mathbb{Z}_k$.
2. Let $G = (\mathbb{C}^*, \cdot)$ and let $\mathbb{T} = \{x + iy \in \mathbb{C}^* \mid x^2 + y^2 = 1\}$. Use the First Isomorphism Theorem to prove that $G/\mathbb{T} \approx (\mathbb{R}^+, \cdot)$.