MATH 440: Chapter 4 Write-Up Problems

Name:

1. Let a be an element of a group G. Give, with proof, the generator of the subgroup $\langle a^m \rangle \cap \langle a^n \rangle$.
2. Prove or disprove: $\mathrm{SL}_2(\mathbb{Z}_2)$ cyclic.
3. Solve for x. Explain your work and express your answer in the form of $a + bi$ for $a, b \in \mathbb{R}$.

$$-ix^2 + 2x + i + 1 = 0.$$