

## MAT 543 FALL 2025 PROBLEM SET 6

**Problem 1.** Classify up to isomorphism of  $\mathbb{C}$ -Lie algebras all  $\mathbb{C}$ -Lie algebras whose  $\mathbb{C}$ -vector space dimension equals 0, 1, 2 or 3. For each, say if it is Abelian, say if it is nilpotent, say if it is solvable, and say whether it is semisimple. For each, find the lower central series and find the derived series. In particular, find the center, the nilpotent radical, and the solvable radical.