Rep Thy I: Problem Set 2 (due Fri Sep 14)

- Exercises 2.1, 2.2, 2.3, 2.5, 2.6ab, 2.7 from Serre
- **Problem A:** Construct the character table for D_8.
- **Problem B:** Consider the quaternion group $Q_8 = \{\pm 1, \pm i, \pm j, \pm k\}$ (with $i^2 = j^2 = k^2 = -1$ and $ij = k = -ji$).

  (i) Construct all 1-dimensional representations of Q_8.

  (ii) Determine the number and dimensions of all representations of Q_8.

  (iii) Use orthogonality relations together with (i) and (ii) to construct the character table for Q_8 (do not construct the higher degree characters by first constructing representations and computing traces).

Presentations

WL (2.2), RR (2.3), SW (2.6), JD (Prob A), LD (Prob B)