Modern Algebra (Math 6302)
Fall 2024, Final Exam
****skeleton version – not the actual exam****

For full credit, complete all problems, show your work, and justify your answers.

(1) Something which requires you to know and use the class equation for a group acting on itself by conjugation (see lectures 9 and 10).

(2) Construct a non-Abelian group of order ******.

(3) Something about prime ideals in commutative rings (from lecture notes).

(4) Something about PIDs (from lecture notes).

(5) Explicit construction of a finite field of a certain order.

(6) Let R be **(some ring)** and let $I \subseteq R$ be **(some ideal)**.

   (a) Find a complete set of distinct representatives for R/I.

   (b) Prove **(something about R/I)**.