

This exam has 5 questions, for a total of 50 points. To earn full credit for a problem you must show all of your work. You may not use a calculator or any other resources other than your book during this exam. Once you are done scan and upload the exam to your google drive folder by 10pm today. Name it final.pdf. Only solutions on the exam will be graded. If you think there is an error in the problem then answer the problem the way that you think it should be written. If you don't know how to solve a problem write down as much as you know about the problem. I had a wonderful time teaching this class. Keep in touch! May the odds be ever in your favor!! Have a wonderful summer break ☺

First Name: _____ Last Name: _____ # _____

Math 312GT Final

Question:	1	2	3	4	5	Total
Points:	10	10	10	10	10	50

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1. (10 points) Let $G = D_8$ and let $\Omega = \{H \mid H \leq G\}$. Let G act on Ω by conjugation. Let $S = \{a, b\}$ be a set of generators for G . Draw the Cayley graph. Show your computations.

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2. (10 points) List the elements in A_6 that have order 3.
3. (10 points) Let $\sigma = (a_1 a_2 \cdots a_m) \in S_n$ where $1 < m \leq n$. Find σ^{-1} . Your answer should be in terms of a_1, a_2, \dots, a_m .

4. (10 points) Let $G = A_4$ and let $H = \langle (123) \rangle$. List the right cosets of H in G .

5. (10 points) Let G be a group such that $H \leq G$. Prove or disprove: H acts on G where $h \cdot g = gh^{-1}$.