Math 103A Fall 2005 Homework 2

Due 10/10/05 in class

All exercise and page numbers refer to Gallian, 6th edition.

0. These exercises are suggestions for extra practice at home (or in section) and are *not to be turned in!*
Gallian Section 1, #5, 7, 11, 13
Gallian Section 2, #5, 8, 9, 13, 15, 17, 19, 33
Gallian Section 3, #1, 7, 13, 23, 35, 39, 48, 49

1. Do Gallian Section 1, #6, 8, 14.

Comments:
for #6 and #8, ignore the word "geometrically" and use any valid argument you can come up with; it might be geometric or it might be algebraic.

2. Do Gallian Section 2, #12, 14, 20, 24, 26, 34.

Comments:
for #34, you can assume without proof that multiplication of 3 by 3 matrices is associative.

3. Let $G = \mathbb{Q} \setminus \{0\}$ be the set of all nonzero rational numbers. Define a binary operation $*$ on G by the rule $a * b = 3 \cdot a \cdot b$. The $\cdot$ symbol here indicates ordinary multiplication of rational numbers. Prove that this operation makes G into a group.

4. Do Gallian Section 3, #6, 14, 44.

Comments:
In #44, "a power of 2" means any number of the form 2^n where $n \in \mathbb{Z}$.