Chris Bendel and Peter Cholak Math 222 - Quiz 10 Wednesday, April 7

Be sure to carefully write up your answers. It is suggested that you first write out a draft of your proposed questions and then carefully rewrite that draft to get your final version. You do *not* have to write the answers on this sheet of paper.

Determine which of the following sets form a group. If not, explain why.

(a) The permutations of odd *order* in S_4 under permutation multiplication.

(b) The positive real numbers under multiplication.

(c) The postive real numbers under addition.

(d) The set $3\mathbb{Z} \equiv \{0, \pm 3, \pm 6, \pm 9, \pm 12, \dots\} \subset \mathbb{Z}$ under addition.

Write out the multiplication table for the dihedral group D_3 obtained from an equilateral triangle. Orient the triangle so that one of the points is facing upward and define the "flip" to be sideways as done in class for the square and D_4.

Let $n \geq 3$ be a non-negative integer. How many elements of order two does the dihedral group D_n have? *Hint:* The answer may depend on whether n is even or odd.