

**MATH 401 INTRODUCTION TO ANALYSIS-I,
FALL TERM 2007, PROBLEMS 5**

INEQUALITIES, MODULUS

Return by Monday 1st October

1. Find all real values of x such that

$$\frac{x+1}{x-1} < \frac{1}{x}.$$

2. Suppose that a, b, x, y are real numbers satisfying $a < x < b$ and $a < y < b$. Show that $|x - y| < b - a$.
3. Sketch the graph of the equation $y = |x + 1| - |x - 2|$.
4. Find all x such that $|x + 3| + |x - 3| = 8$.
5. Find all real numbers x that satisfy the inequality $4 < |x + 2| + |x| < 6$.