Math 215: Introduction to Advanced Mathematics
Problem Set 1

Due Friday September 15

Do pg. 54: 6

1) Suppose $b, d \neq 0$

   a) Prove that
   $$\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}.$$

   b) Prove that
   $$\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}.$$

3) Recall that
$$|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a < 0 \end{cases}.$$

Prove that
$$|a + b| \leq |a| + |b|$$

for all a and b. [Hint: You might want to consider 4 cases depending on whether each of a and b is negative or nonnegative.]