MTH 361
Quiz 2
Spring 2010

20 points possible.

1. (4 pts.) Take-home problem.

2. (6 pts.) Define **group**. (If you use technical terms in your statements of the group axioms, define those as well.)

3. (4 pts.) Let $\langle G, * \rangle$ be a group, and let a, b, c, g, h be fixed elements of G. Solve the given equation for x.

$$a * b * x * c = g * h$$

4. (6 pts.) For each binary operation, state whether a group structure is defined on the given set. If yes, just say so. If no, briefly state a reason.

(a) $*$ is ordinary addition on the set $\mathbb{R}^+$ of positive real numbers.

(b) The operation is ordinary matrix addition, operating on the set of matrices of the form

$$\begin{bmatrix} a & b \\ c & d \end{bmatrix}$$

where a, b, c, d are integers, $b = 0$, and $c \neq 0$.

(c) $*$ is defined on the set $\mathbb{R}^+$ of positive real numbers by letting $a * b = \sqrt{ab}$.