MAT 119
Quiz #5
October 4, 2005

Name: Key

You may not use your notes. Please show all of your work. An answer without justification will receive little credit.

(1) Consider the relation R defined on $2^{\mathbb{Z}}$ by $R = \{(A, B) : A, B \subseteq \mathbb{Z}; |A| = |B|\}$. Indicate whether R has each of the following properties and if not give the reason that it does not:

Reflexive: Yes

1pt. each

Irreflexive: No $\{1\} R \{1\}$ for example.

Symmetric: Yes

Antisymmetric: No, $\{1\} R \{2\}$ and $\{2\} R \{1\}$ but $\{1\} \neq \{2\}$

Transitive: Yes

(2) Let $A = \{1, 2, 3, 4\}$ and let $R = A \times A$. Then R is a relation on A. Indicate whether R has each of the following properties and if not give the reason that it does not:

Reflexive: Yes

1pt each

Irreflexive: No, $(1,1) \in R$.

Symmetric: Yes.

Antisymmetric: No $(1,2)$ & $(2,1) \in R$ but $1 \neq 2$.

Transitive: Yes.