

# Algebra - hw # 3

fall 2008

If you want to use that for a group  $S$  you can't have  $S \simeq S \times S$ , you need to prove it. Keep in mind that:

- 1) Cardinality arguments only work when  $S$  is finite.
- 2) If you say that certain map cannot be surjective or injective, I need to see a proof, or at least some sort of explanation to support that statement.
- 3) Some of you seem to be confusing the definition of "injective" with the definition of "function", namely: given an application  $f : X \rightarrow Y$ , we say that  $f$  is a *function* if (i) below holds. Now if  $f$  is a function, we say that it is *injective* if (ii) below holds.

- **function** if  $(\forall a \in A) (\exists! b \in B) : f(a) = b$

- **injective** if  $(\forall b \in B) (\exists! a \in A) : f(a) = b$

- 4) Intuition can be deceptive. Have you heard of the Peano curve?