

2007 Spring CS204 Homework #3

1. Given that $A \subseteq C$ and $B \subseteq D$, show that $A \times B \subseteq C \times D$.

2. Exercise 2.3.26

3. Exercise 2.3.28

4. Let $f: E \rightarrow F$ and $g: F \rightarrow G$ be two functions

(i) f and g injective $\Rightarrow g \circ f$ injective.

(ii) f and g surjective $\Rightarrow g \circ f$ surjective.

(iii) f and g bijective $\Rightarrow g \circ f$ bijective.

Prove these properties.

5. Show that the set of integers Z is countable.

6. Show that the set of real numbers between 0 and 1 is uncountable.