

MA1124 Assignment5

[due Monday 16 February, 2015]

1. Prove that every finite totally ordered set has a unique maximal element.
2. Prove that if f is 1-1 on A and 1-1 on B and $f(A) \cap f(B)$ is empty then f is 1-1 on $A \cup B$
3. Use Zorn's Lemma to prove the corresponding statement about a minimal element.
4. Let A and B be any two sets. Let X be the collection of functions that map a subset of A 1-1 onto a subset of B . Define a partial order on X and use Zorn's Lemma to show that there is a function that maps A 1-1 into B or maps part of A 1-1 onto B .