

## Set Theory Problem Session 2

1. 2.3.6
2. 2.4.1
3. 2.5.1
4. 2.7.1
5. 2.7.2
6. A **nest** is a class which is linearly ordered by  $\subseteq$ . Show that the axiom of choice is equivalent to the principle that if every non-empty nest which is a subset of a non-empty set  $x$  has its union an element of  $x$ , then  $x$  has a maximal element with respect to  $\subseteq$ .
7. Use the Axiom of Choice to show that every vector space has a basis.