

- Problem 1.** (i) Suppose  $S$  is a set. Devise a sentence, using only quantifiers, variables, logical connectives ( $\forall$ ,  $\wedge$ ,  $\implies$ ,  $\iff$ ), and equality (the  $=$  sign) that means “There are at least two elements of  $S$ .” (In particular, you are not allowed to refer to the cardinality of  $S$  or use the notation  $|S|$  in your sentence.)
- (ii) With the same restriction as in the last part, devise a sentence that means “ $S$  contains exactly two elements.”