

## Problem 1

A structure would could be used to prove that the set of English sentences is infinite could involve repeated conjunction. Consider the following example:

```
This is okay.  
This and this are okay.  
This and this and this are okay.  
...
```

Since one could repeatedly add "and this" to that sentence, one could create an infinite number of sentences of that form.

A similar structure could be used to show that infinitude of English words. We can prepend and append prefixes and suffixes to words *ad infinitum* to create an infinite number of words. Consider the following example:

```
terror  
terrorize  
terrorization  
terrorizational  
deterrorizational  
...
```

... and so on.

## Problem 2

Since a set contains no duplicates, we can say that  $|A|$  is 1.

## Problem 3

For sets  $A$  and  $B$ ,  $A \subseteq B$  implies that all elements in  $A$  are also elements in  $B$ . Since  $\emptyset$  contains no elements, then it is trivial, for any set  $C$ , to say  $\emptyset \subseteq C$ .