

## Worksheet 8b

1. State the given set is finite, or not finite.

a.  $\{1,2,3,4\}$

b.  $\{1,4,7,10,13, \dots\}$

c.  $\{1,2,3,4, \dots, 500\}$

d.  $\mathbb{N}$

e.  $\{x|x = 5k, k \in \mathbb{Z}\}$

f.  $(0,1)$

g.  $\mathbb{R}$

2. Let  $A$  be a finite set. If  $B \subseteq A$ , then  $B$  is finite. (Statement 6.5)

3. Let  $A$  and  $B$  be finite sets. Prove that  $A \cap B$  is finite. (Statement 6.6)

4. Let  $A$  and  $B$  be finite sets. Prove that  $A \cup B$  is finite. (Statement 6.7)

5. Prove the following statement:

If  $A_1, A_2, \dots, A_n$  are finite sets, then  $\bigcup_{i=1}^n A_i$  is finite.