**4.8** Assume the domain of discourse to be all human beings. Translate the following sentences into predicate logic:

1. Augustus is not loved by everyone. (Use *a* for Augustus, *L* for love.)

(Not sure to use or )

1. Augustus and Livia respect each other. (Use *a* for Augustus, *l* for Livia and *R* for respect.)

1. Livia respects everyone who loves Augustus.

→

**4.10** For each of the following, specify an appropriate domain of discourse, specify a key, and translate into predicate logic. (Note: you have to understand what a sentence means before you can attempt to translate it.)

1. Dogs that bark do not bite.

Domain of discourse: All dogs.

Keys: *B* for bark, *T* for bite.

1. All that glitters is not gold.

Domain of discourse: All non-living things.

Keys: *G* for glitter, *O* for being gold.

1. Friends of Michelle’s friends are her friends. F of (F of M) are F of M

Domain of discourse: All people.

Keys: *m* for Michelle, *F* being friend.

1. There is a least natural number. Some natural number is smaller than all natural number.

Domain of discourse: natural numbers N = {0, 1, 2, 3, 4, … }.

Keys: *S* for being smaller than.

1. There is no largest prime number.

Domain of discourse: natural numbers N = {0, 1, 2, 3, 4, … }.

Keys: *P* for being prime. *L* for being larger than or equal to.