Worksheet #14; date: 10/15/2018
MATH 55 Discrete Mathematics

1. *(Rosen 6.2.13a)* Show that if five integers are selected from the first eight positive integers, there must be a pair of these integers with a sum equal to 9.

2. *(Rosen 6.2.23)* Show that whenever 25 girls and 25 boys are seated around a circular table there is always a person both of whose neighbors are boys.

3. *(Rosen 6.2.40)* Prove that at a party where there are at least two people, there are two people who know the same number of other people there.

4. *(Rosen 6.2.45; challenging)* Let x be an irrational number. Show that for some positive integer j not exceeding the positive integer n, the absolute value of the difference between jx and the nearest integer to jx is less than $1/n$.