6.3 Permutations and Combinations

6.3 pg 413 # 1
List all the permutations of \( \{a, b, c\} \).

6.3 pg 413 # 3
How many permutations \( \{a, b, c, d, e, f, g\} \) end with \( a \)?

6.3 pg 413 # 7
Find the number of 5-permutations of a set with nine elements.

6.3 pg 413 # 11
How many bit strings of length 10 contain

a) exactly four 1s?
b) at most four 1s?
c) at least four 1s?
d) an equal number of 0s and 1s?

6.3 pg 414 # 31
The English alphabet has 21 consonants and 5 vowels. How many strings of six lowercase letters of the English alphabet contain

a) exactly one vowel?
b) exactly two vowels?
c) at least one vowel?
d) at least two vowels?