1. Rank the following carbocations in order of stability from worst to best.

a) 3 2 1 3
b) ~ same
c) 1 ~ same
d) 2 1 3

2. Provide the mechanisms for the following reactions. Clearly show every bond making and bond breaking step.

a) 

b) 

c) 

d) 

e) 

f) 

g) 

h) 

i) 

j) 

3. Provide the products of the following reactions:

a) 

b) 

c) 

d) 

e) 

f) 

nearly racemic