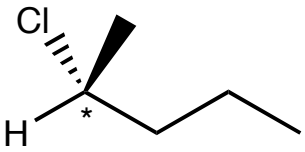
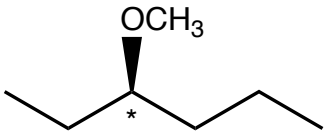
Name _____ Test 3 (12/9)
CHEM 0201 (Organic) Fall 2011

1. (8 pts. ea.) Determine the configuration of the chiral centers that are marked with a star.

a. 

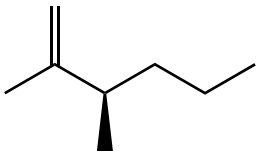

b. 

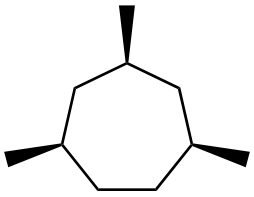

1. _____
2. _____
3. _____
4. _____

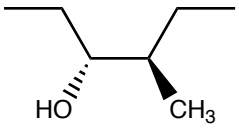
2. a. (8 pts.) Place a star next to the chiral centers on the following molecules.

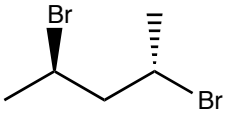
b. (8 pts.) Determine whether the following molecules are chiral (label any meso complexes as such).

5. _____
6. _____
7. _____
8. _____

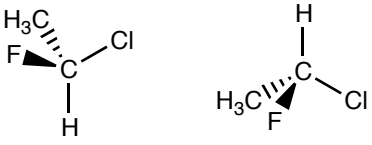
i. 

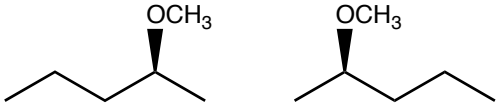
ii. 

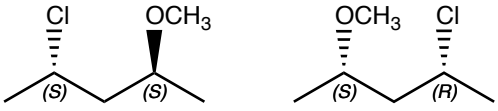
iii. 

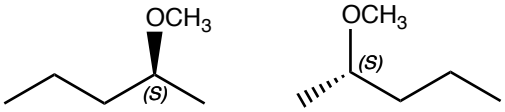

iv. 


3. (12 pts.) For each of the following pairs of molecules, determine whether the molecules are enantiomers, diastereomers, or different views of the same molecule.

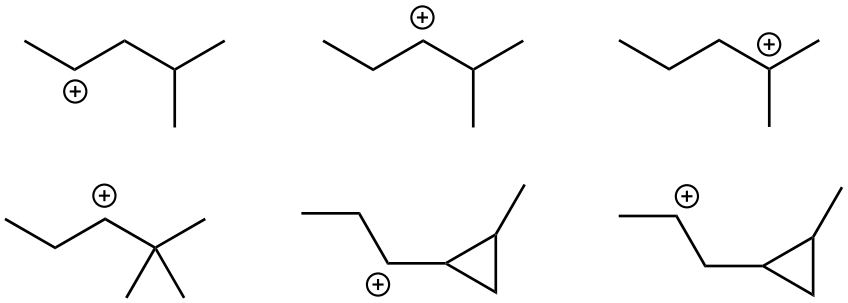
a. 


b. 

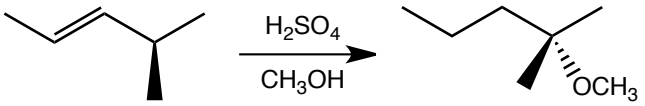

c. 


d. 

4. (12 pts.) Which of the following carbocations would be likely to rearrange if formed as an intermediate during an electrophilic addition.

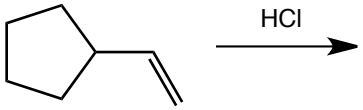


5. (10 pts.) Draw a mechanism that accounts for the formation of the product in the following reaction.

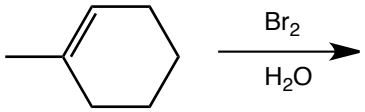



6. (6 pts. ea.) Predict the organic product(s) for the following reactions.

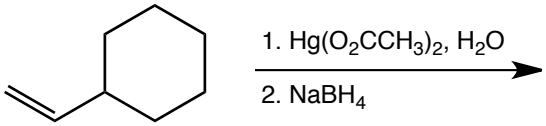
a.



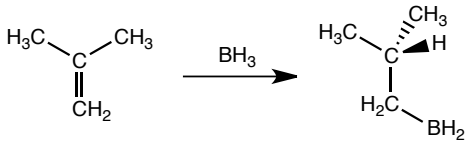

b.




c.



7. Most electrophilic additions are two step processes where an electrophile initiates the reaction with the alkene and a nucleophile finishes the reaction after an intermediate forms. In a borane reaction, there is no intermediate. Instead, part of the borane plays the role of the electrophile and another part of the borane plays the role of the nucleophile.




a. (4 pts.) Identify the part of the borane that plays the role of the electrophile. Explain your choice.

b. (4 pts.) Identify the part of the borane that plays the role of the nucleophile. Explain your choice.

c. (4 pts.) Explain the regioselectivity of the reaction.

8. (10 pts.) Draw a mechanism that accounts for the product in the following reaction.