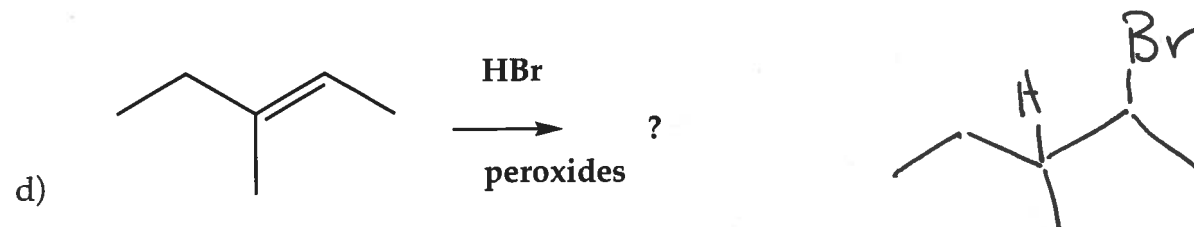
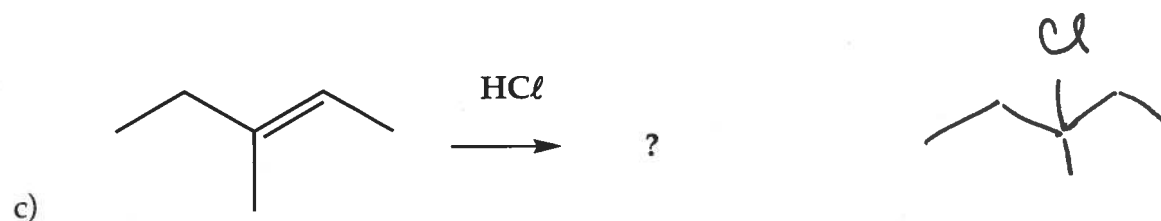
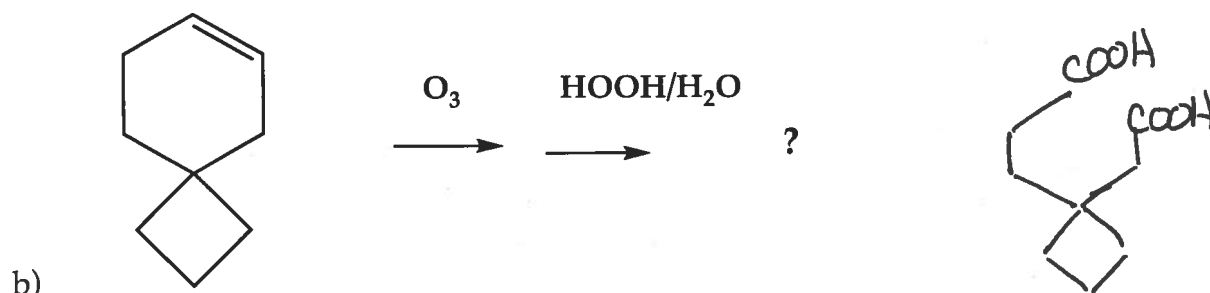
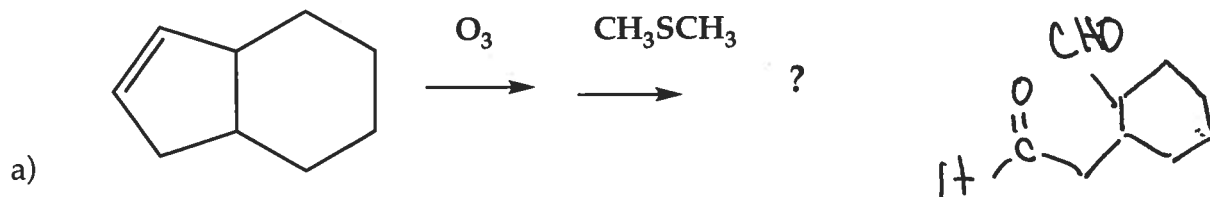


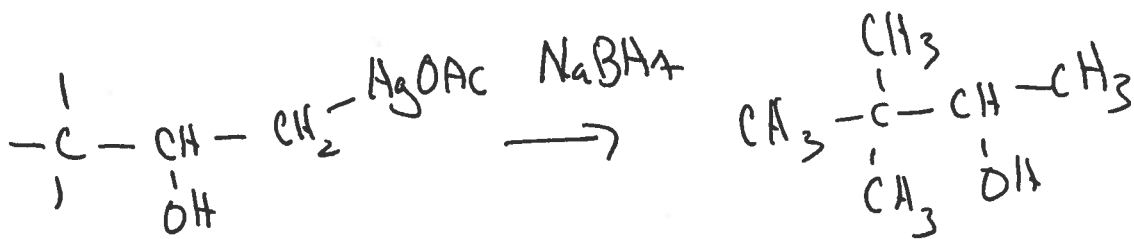
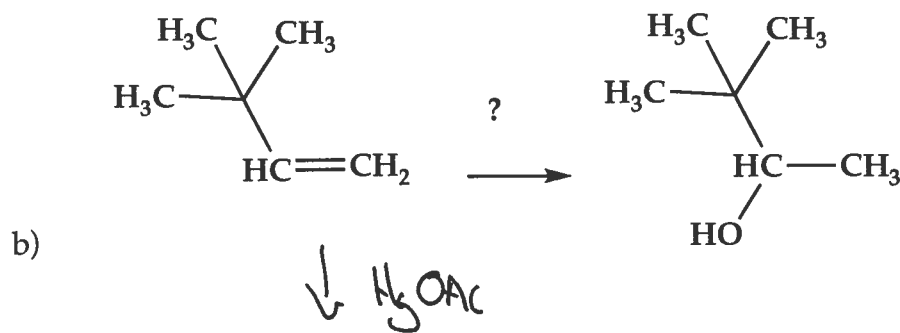
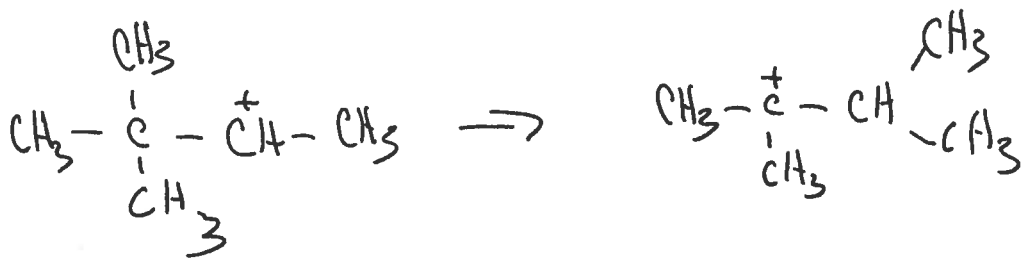
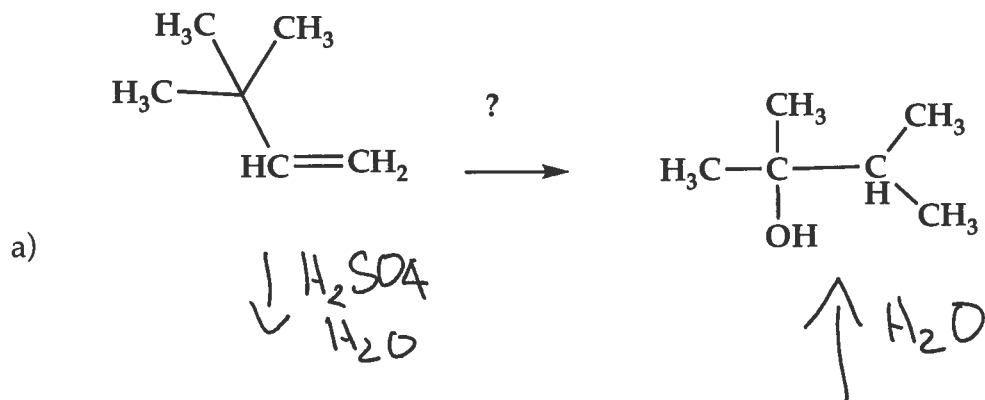
Chemistry 3311-100  
 Organic Chemistry/Dr. Barney Ellison  
 Thursday: March 13<sup>th</sup> @ 7:00pm → 9:00/2<sup>nd</sup> Exam/Math 100)

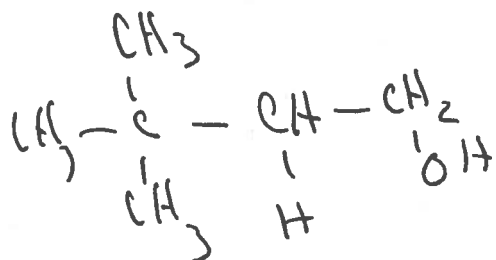
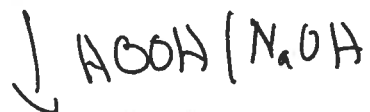
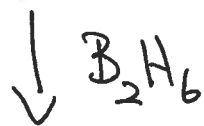
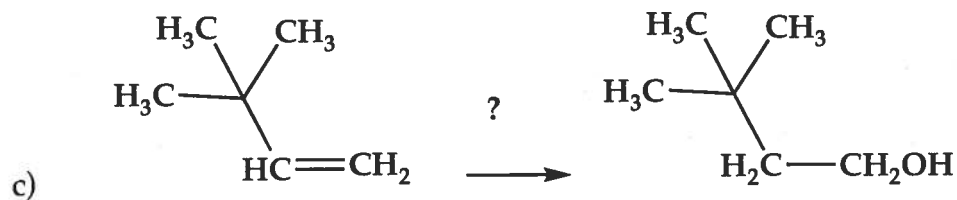
Name: Key (please print)

1. (20 pts) Give the missing reactant or product in each of the following equations.

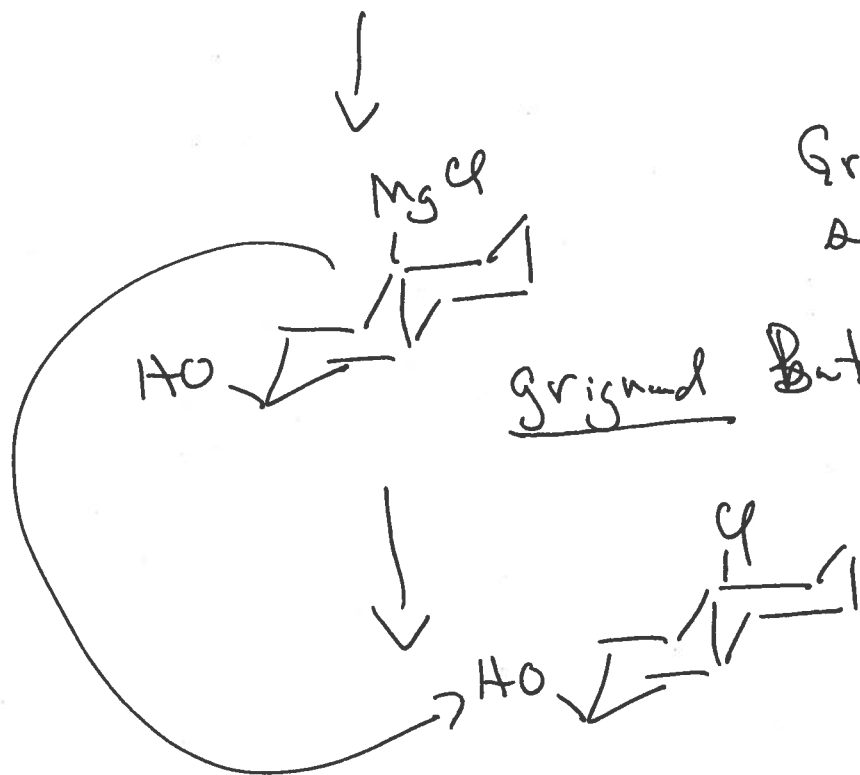
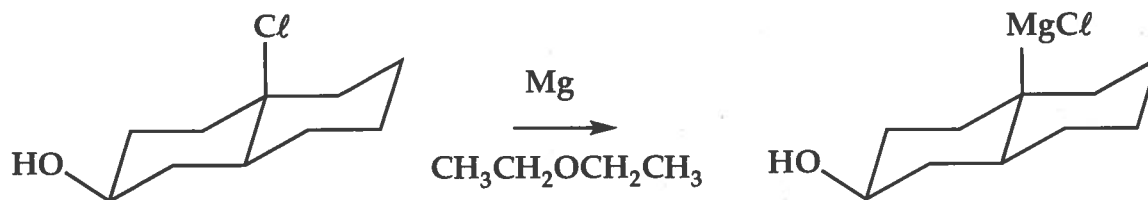


2. (10 pts) Show a means to convert 3,3-dimethyl-1-butene into the proper alcohol.



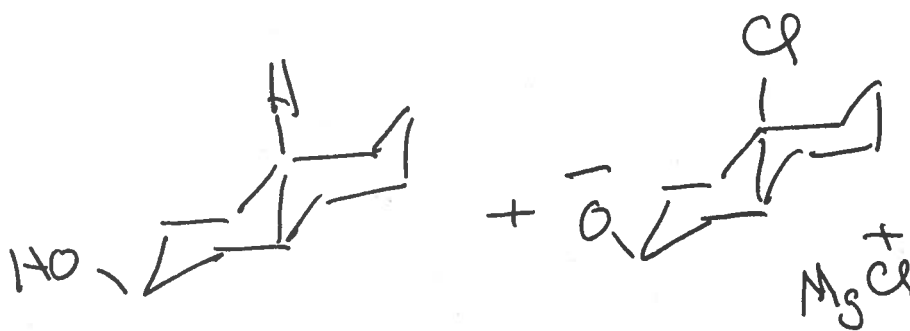


3. (10 pts) The scheme below to prepare a Grignard reagent will fail. Why?

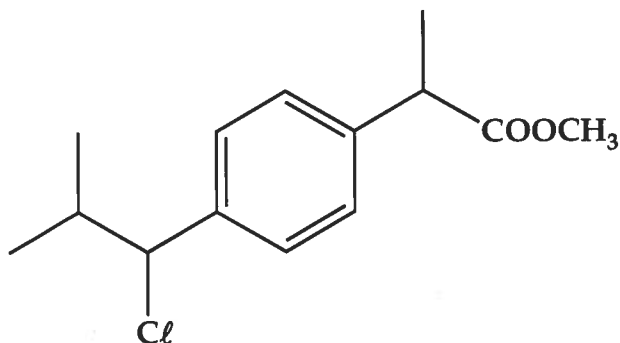


Grignards react with protic solvents. Ether solvent is needed.

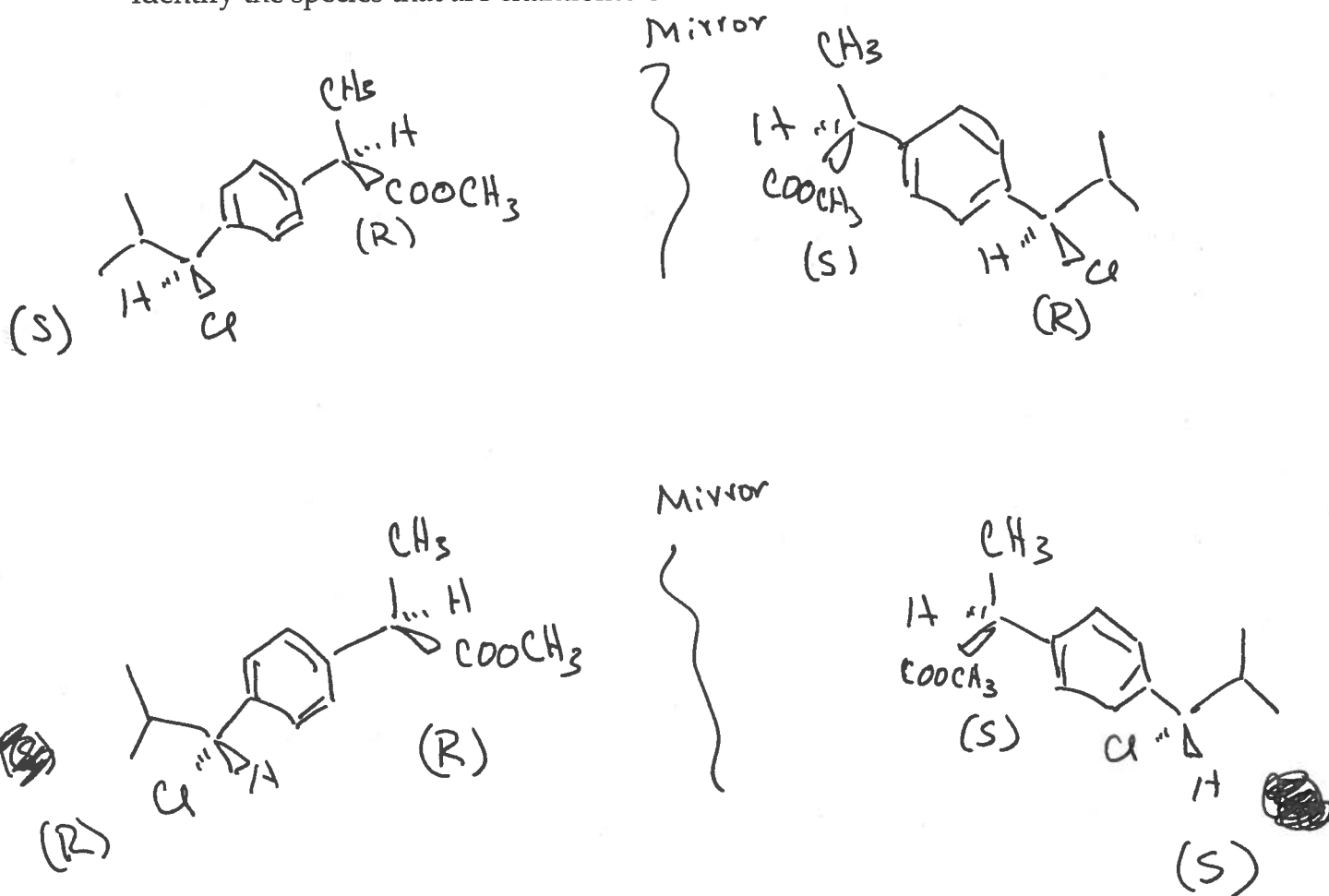
Grignard But this reacts with the alcohol.



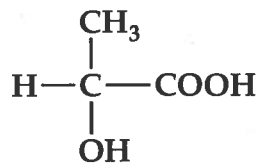
4. (10 pts) Using lines and wedges, draw perspective structures of the four stereoisomers of the ~~amide~~ ester



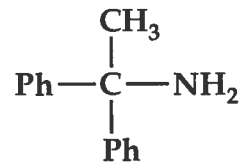
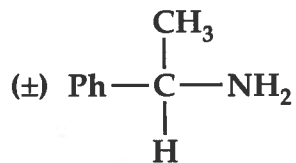
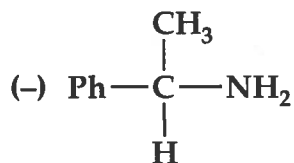
Identify the species that are enantiomers.



5. (10 pts) Suppose you have a racemic carboxylic acid:



Which of the following amines could be used as a resolving agent for this acid?

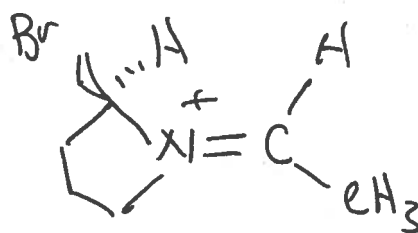
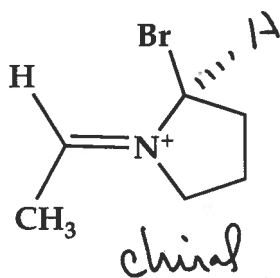
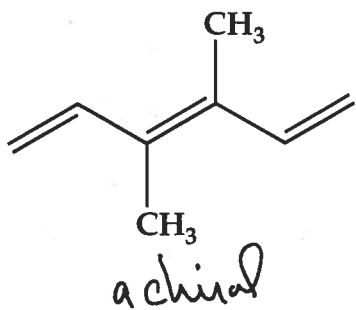


can be used  
as a resolving  
agent.

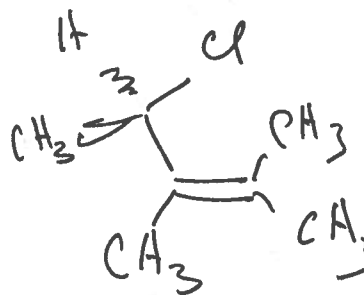
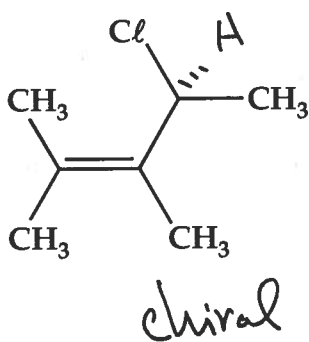
racemic  
mixture  
cannot be  
used

achiral amine  
cannot be  
used

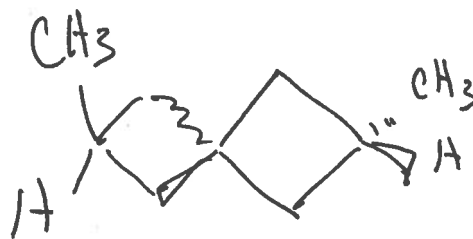
6. (10 pts) Which of the following species is chiral? Draw a structure for the enantiomer.



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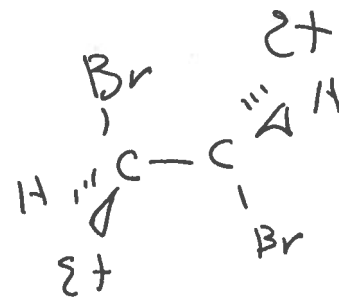
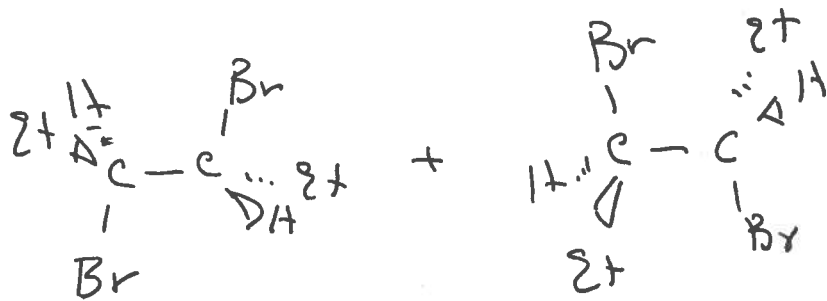
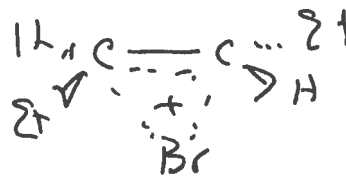
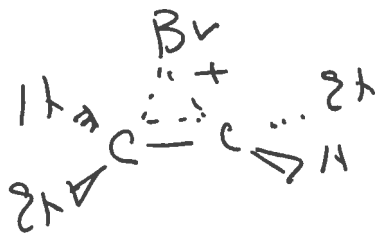
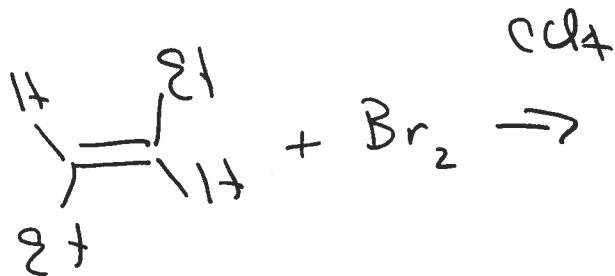
Mirror  
~



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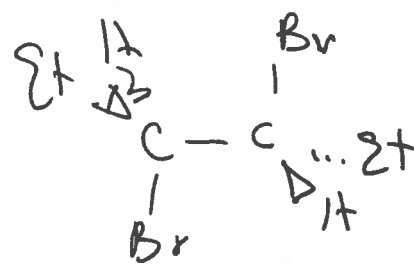
7. (10 pts) Give the products and their stereochemistry of all products formed in each of the following reactions:

a) *trans*-2-hexene + Br<sub>2</sub> in CCl<sub>4</sub> solvent →



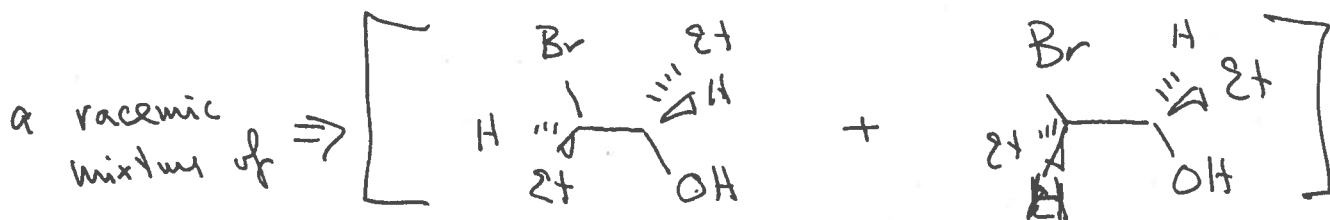
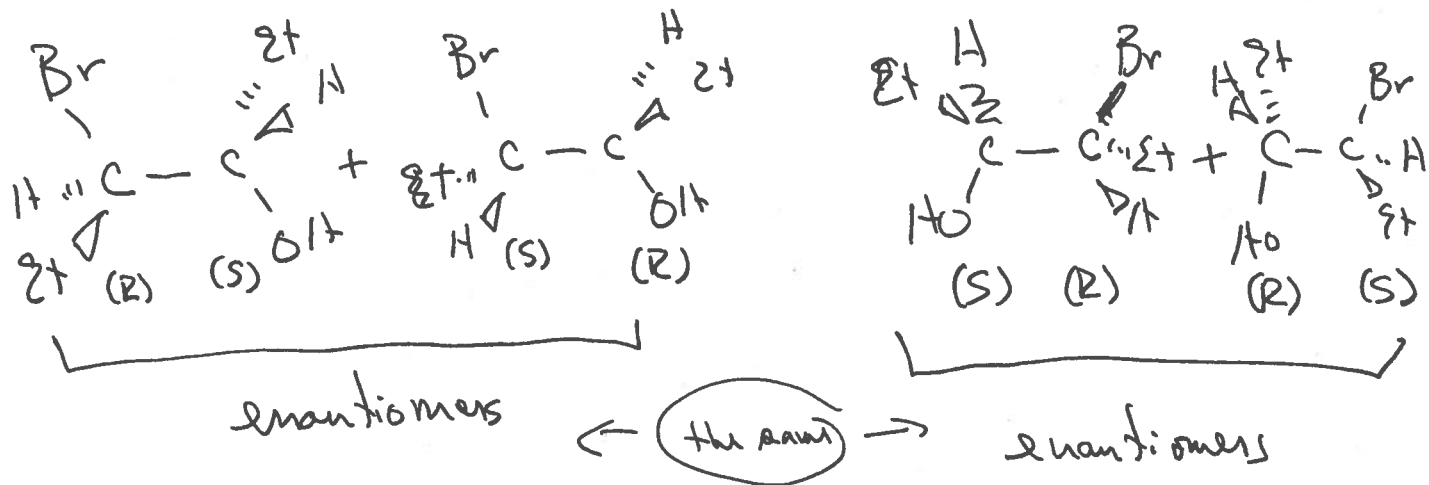
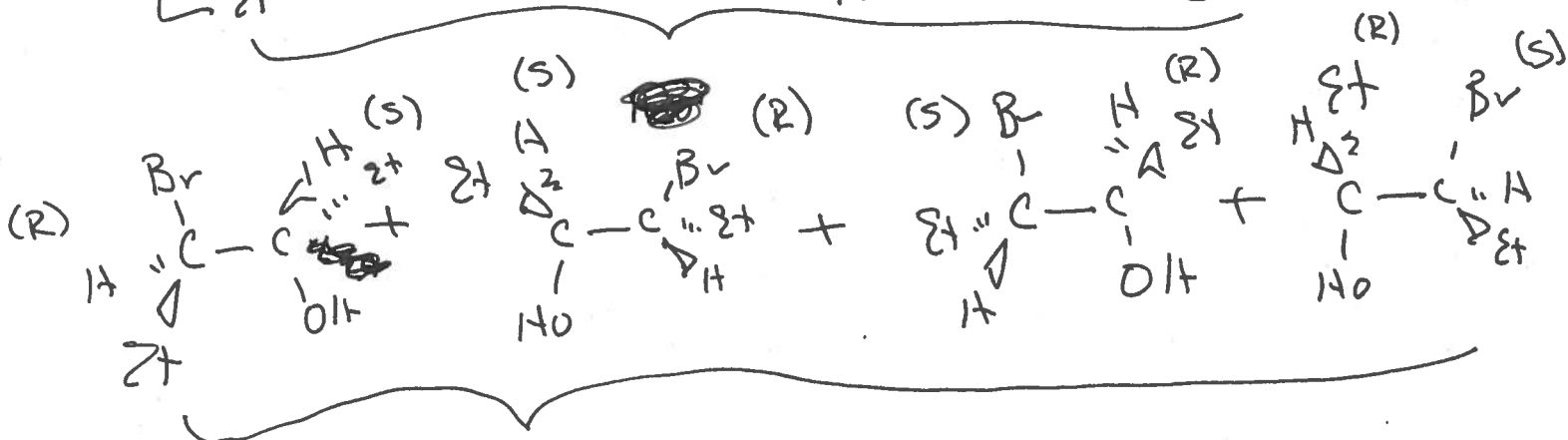
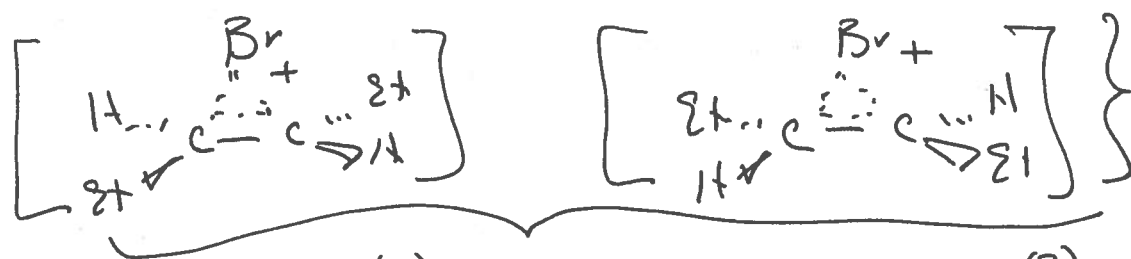
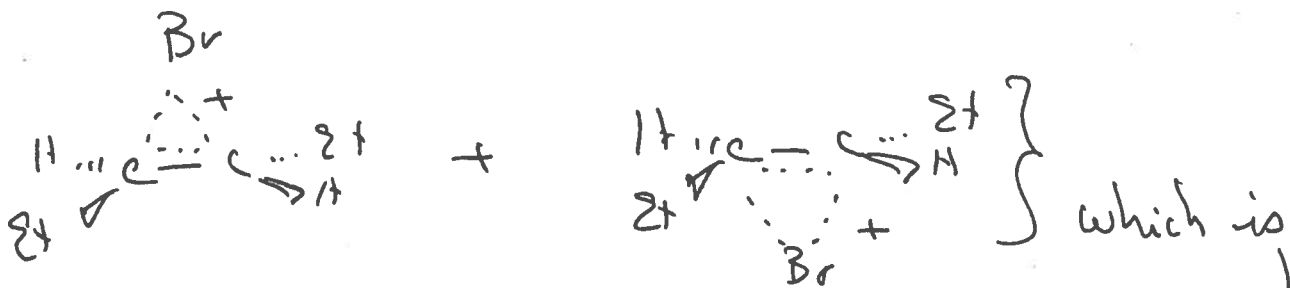
all the same  
compound

a meso dibromide

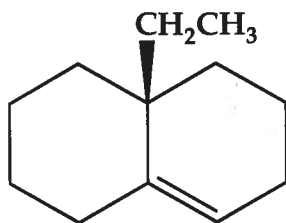




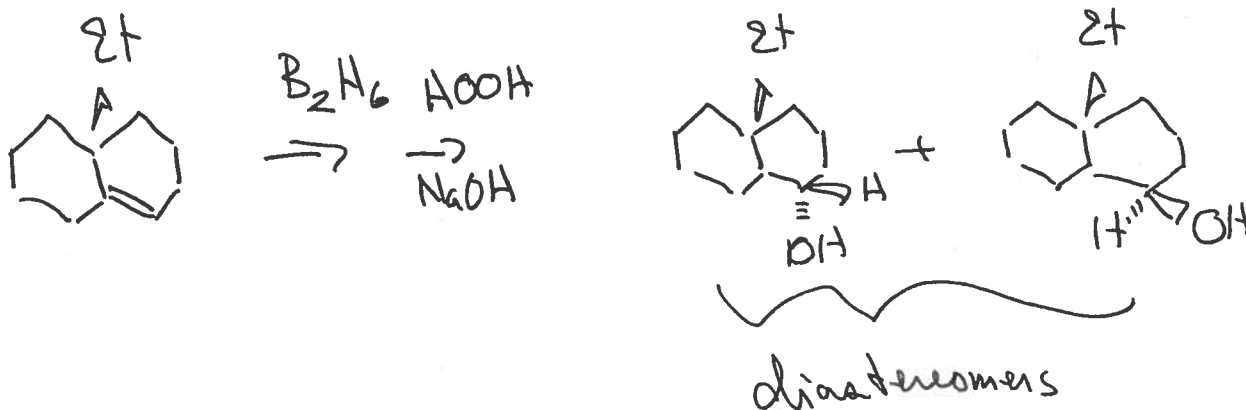
b) *trans*-2-hexene + Br<sub>2</sub> in H<sub>2</sub>O solvent →



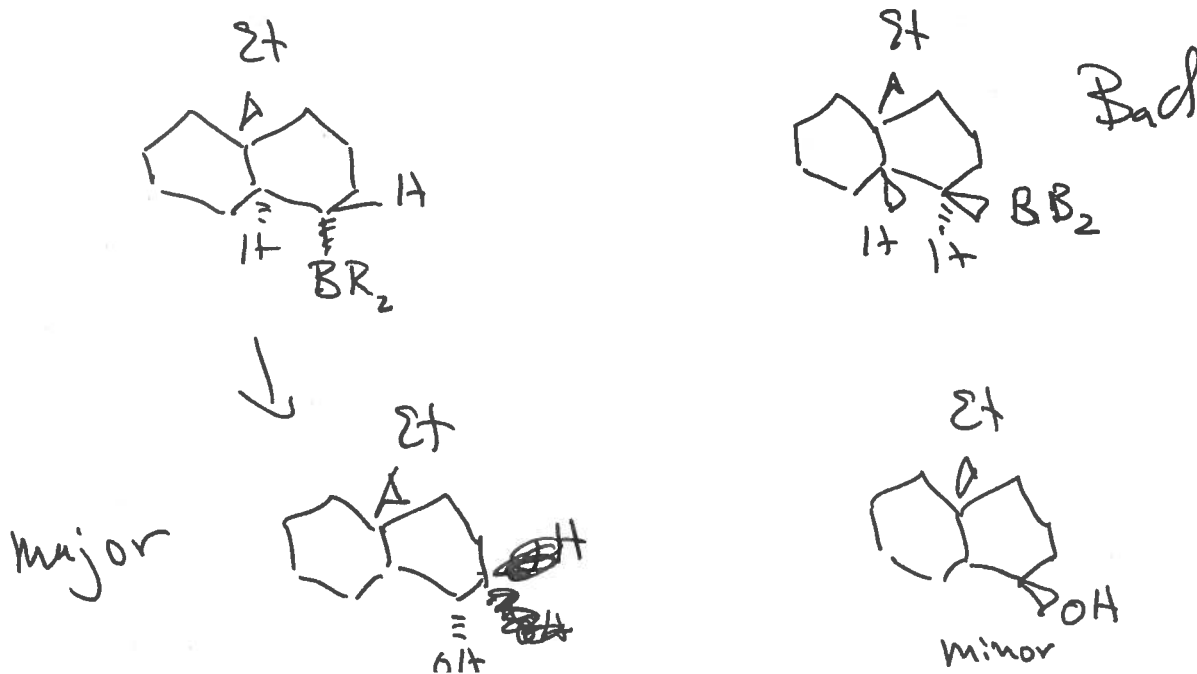
8. (10 pts) What two diastereomeric products could be formed by the hydroboration-oxidation of the following alkene?

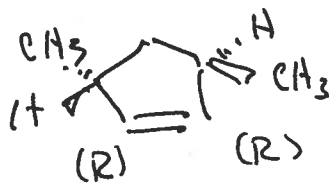


Consider the effect of the ethyl group on the approach of the borane-THF reagent to the double bond. Which of the two diastereomers will be the major product?



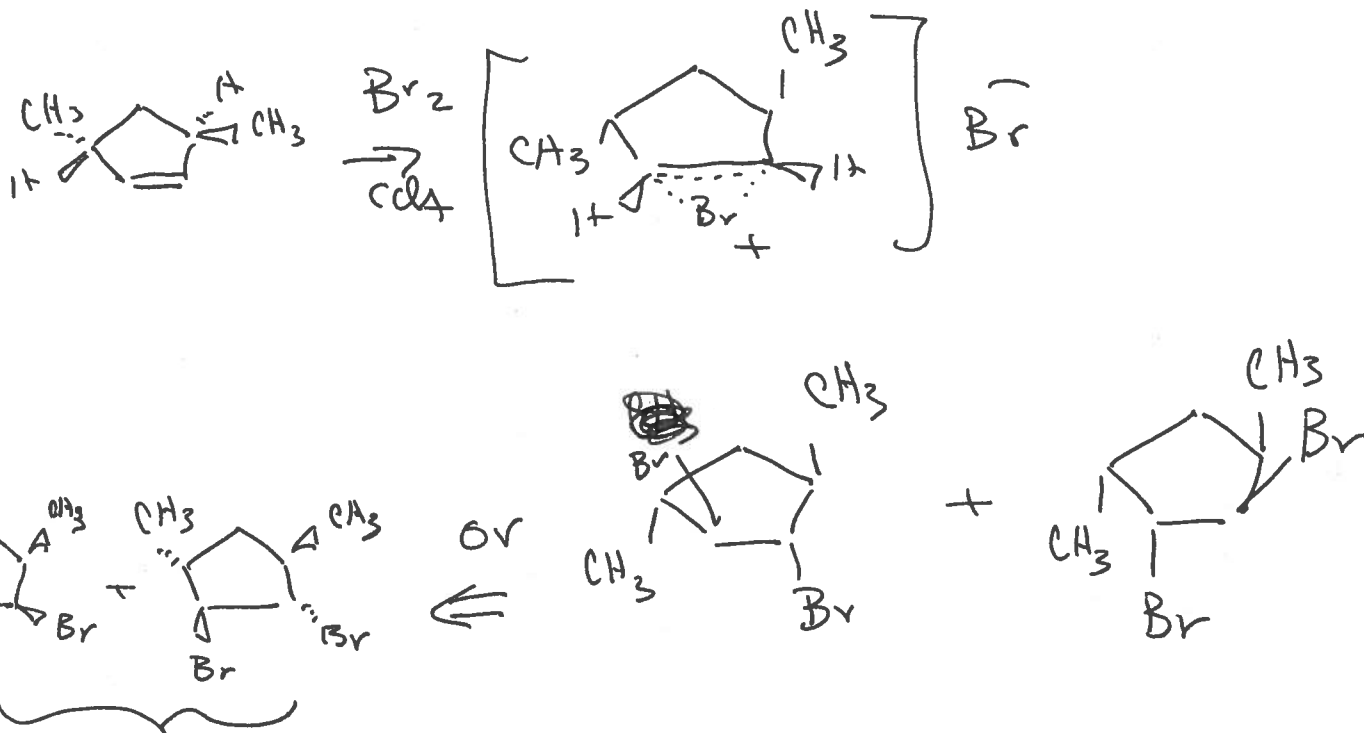
Intermediates



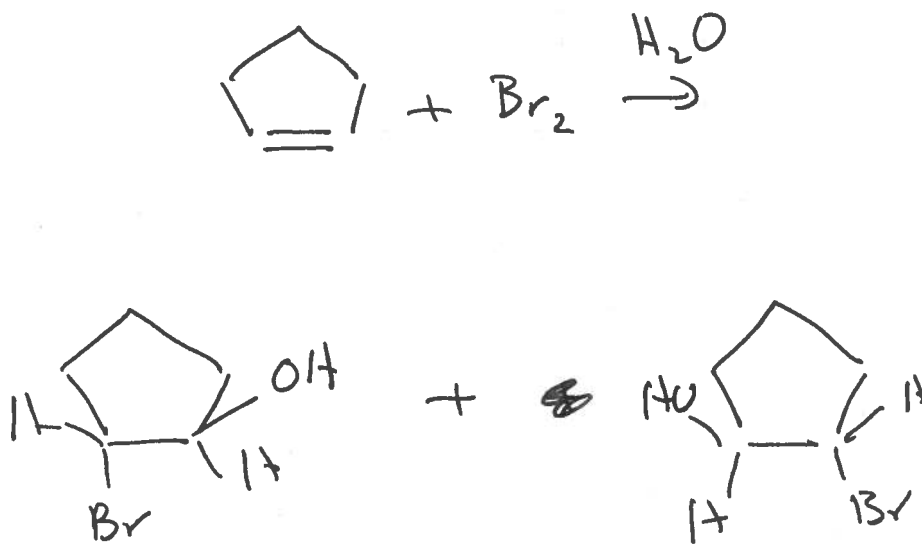


9. (10 pts) Give the structure and stereochemistry of the products of:

a) (3R,5R)-3,5-dimethylcyclopentene + Br<sub>2</sub> (solvent CCl<sub>4</sub>) → products



b) cyclopentene + Br<sub>2</sub> (solvent H<sub>2</sub>O) → products



50:50 mixture