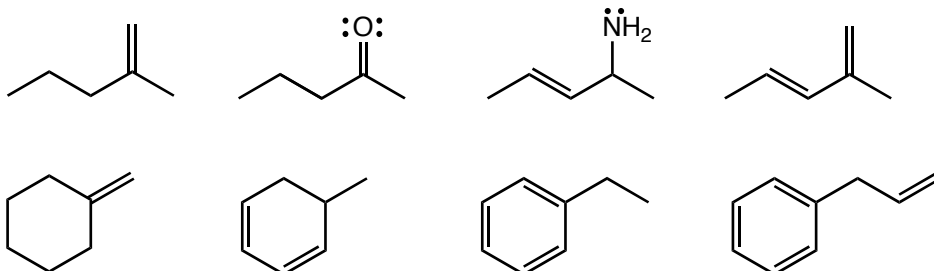


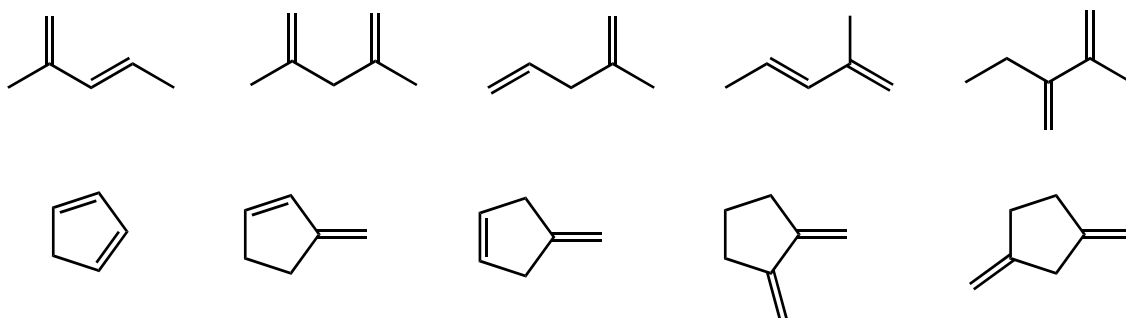
Homework - Chapter 11
Chem 2310

Name: _____

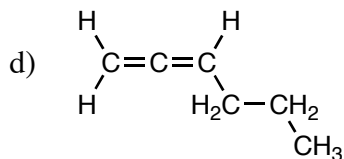
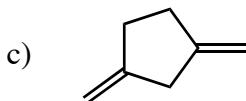
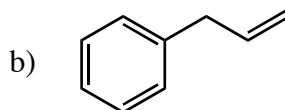
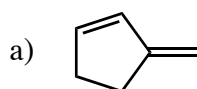
1. Circle all of the compounds below which are considered alkenes.



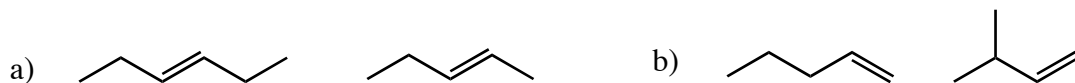
2. Circle all of the conjugated alkenes.



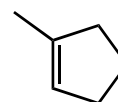
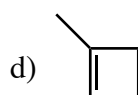
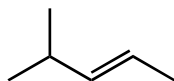
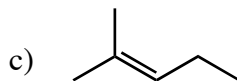
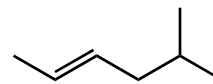
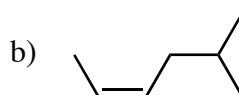
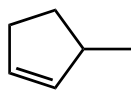
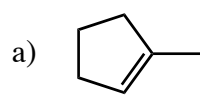
3. Label the hybridization of all carbons in the following compounds.



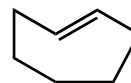
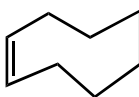
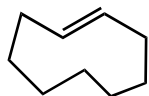
4. Circle the compound in each pair which has the lower boiling point, and explain your reasoning.



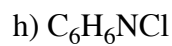
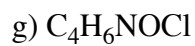
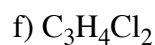
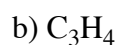
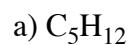
6. Circle the compound in each pair which is more thermodynamically stable. Explain your reason using a short sentence.



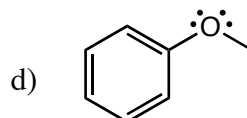
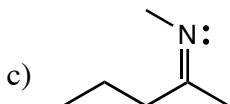
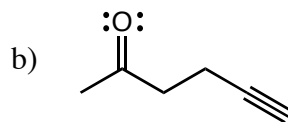
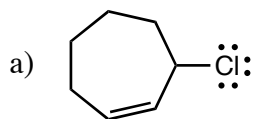
7. Make the following with molecular models. Circle the compounds which are stable.



8. Give the unsaturation number for each of the following molecular formulas. Then draw two different line structures for each formula. Use only functional groups that we have learned!



9. What is the molecular formula and unsaturation number for each of the following? Check yourself by looking at the structure!



10. Draw structures for the following compounds.

a) 3-methyl-1-pentene

b) (Z)-3-methyl-2-octene

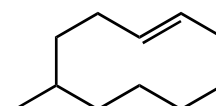
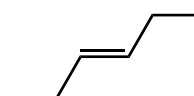
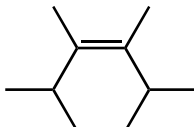
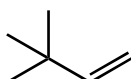
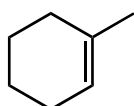
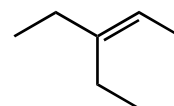
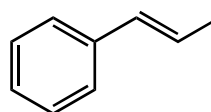
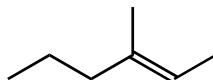
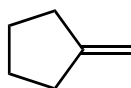
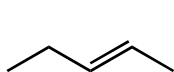
c) (E)-3-methyl-2-octene

d) 3,4-dibromo-1-butene

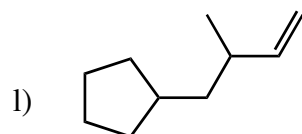
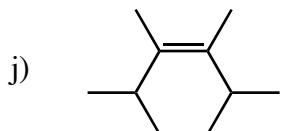
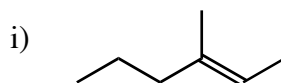
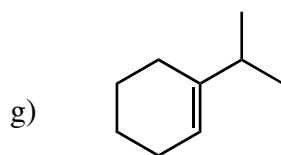
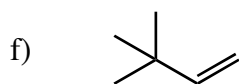
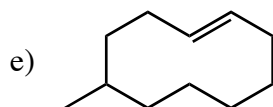
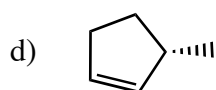
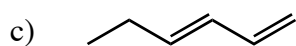
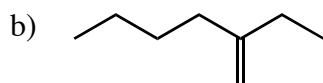
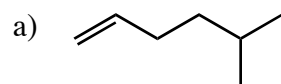
e) 1,3-cyclohexadiene

f) (3Z, 6E)-1,3,6-octatriene

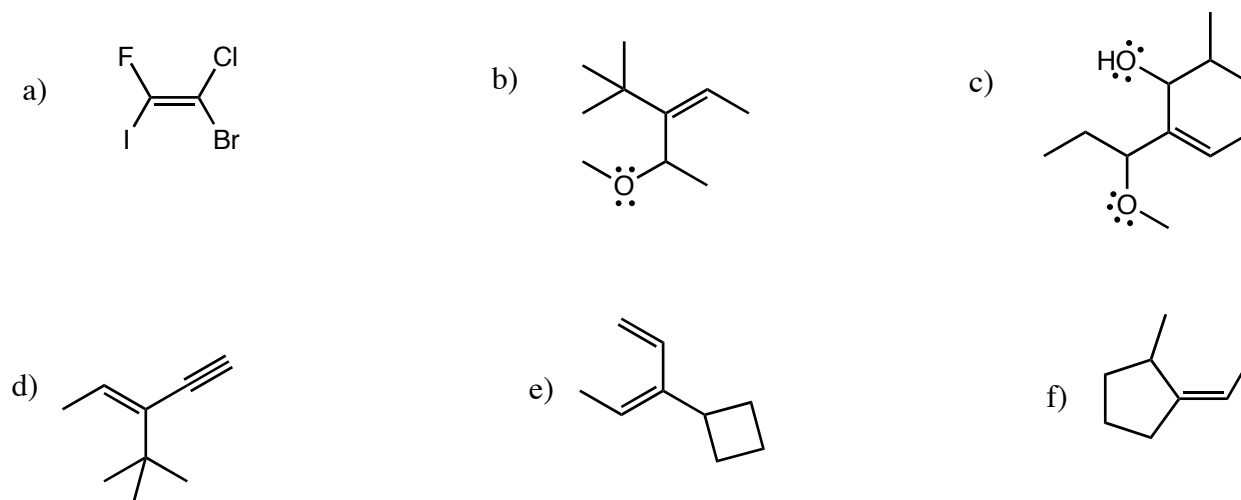
11. Circle all compounds which have a cis/trans or E/Z isomer.



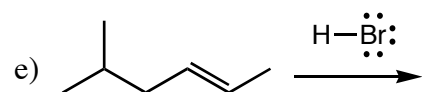
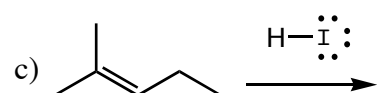
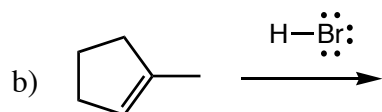
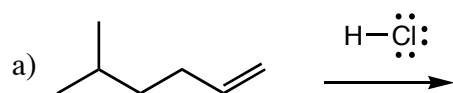
12. Name the following compounds, including stereochemistry where needed.

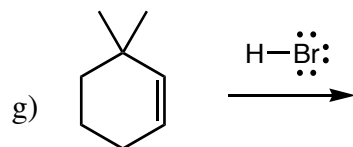
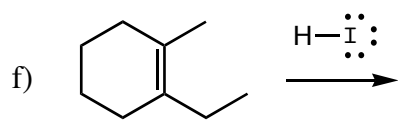


13. Label each of the following E or Z.

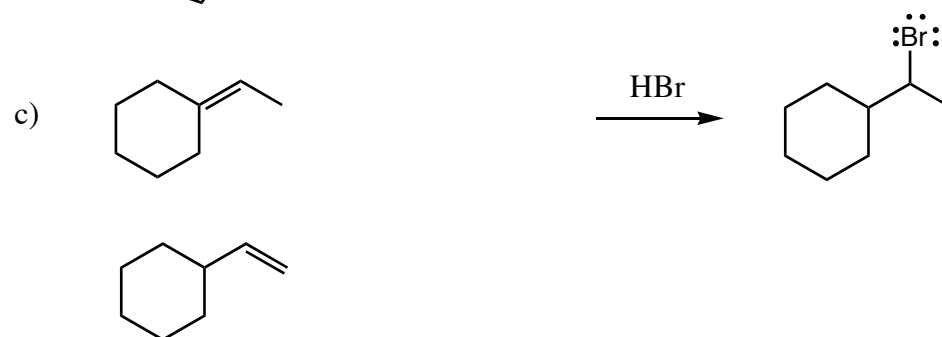
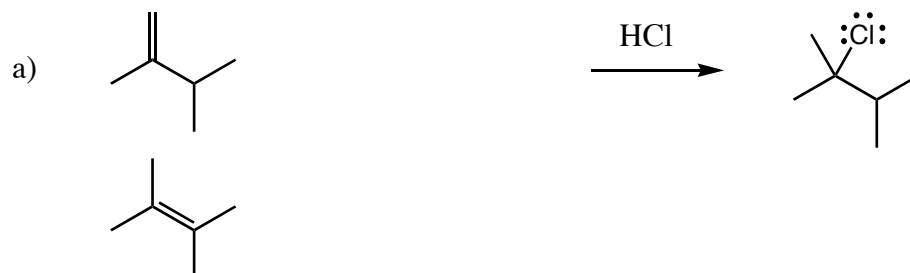


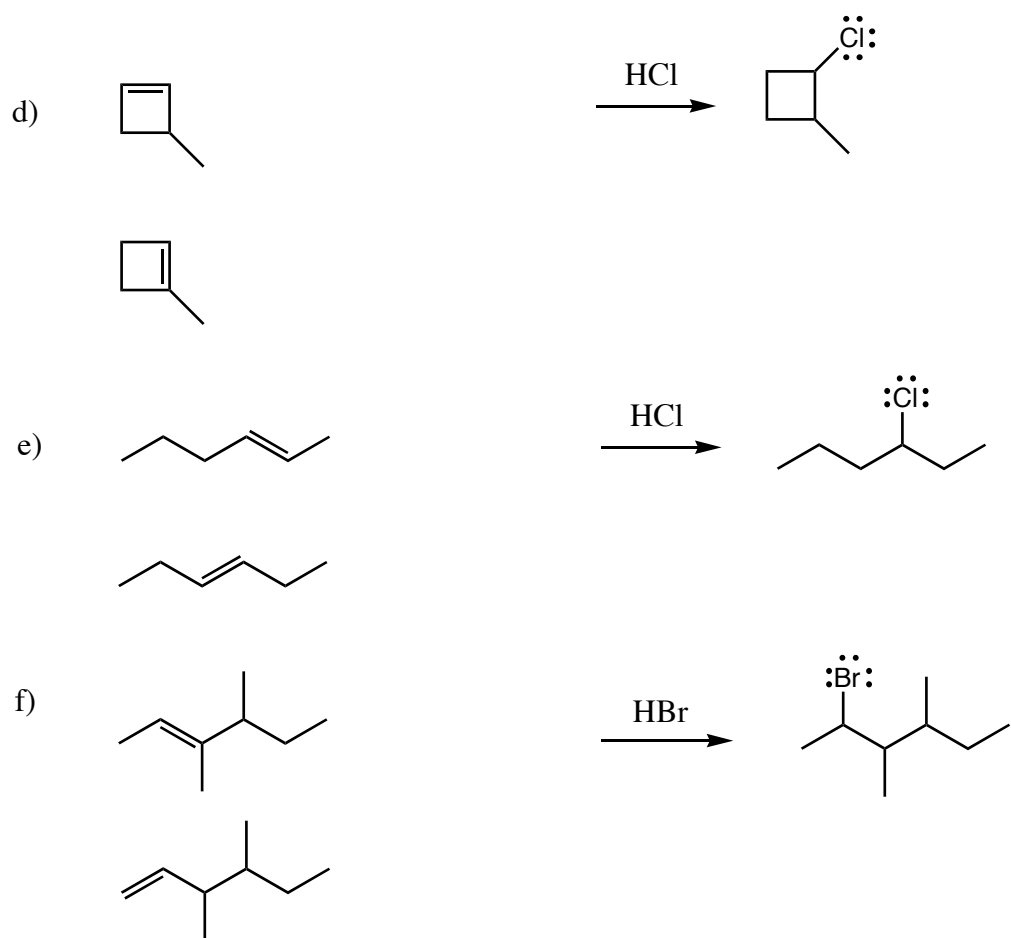
14. Draw the mechanism for each reaction, showing how the product(s) are created.



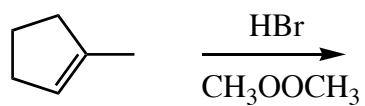


15. Circle any of the following alkenes which could be used to give only the product shown. For those that will not, state why.





16. Fill in the major product of this reaction. Then draw the initiation, propagation, and termination steps of the reaction, showing the arrows and free radicals.

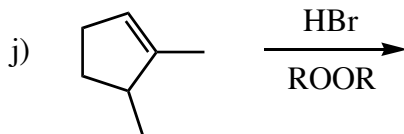
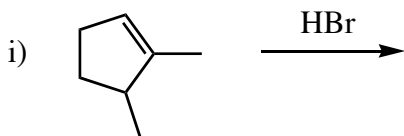
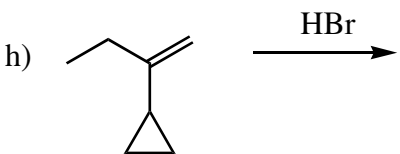
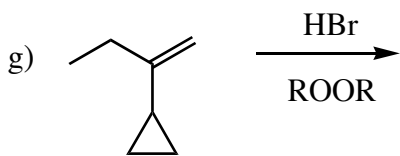
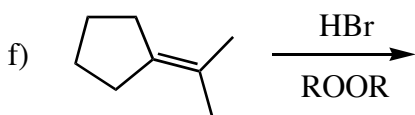
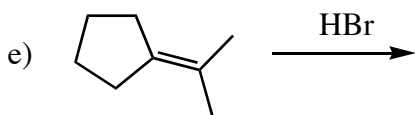
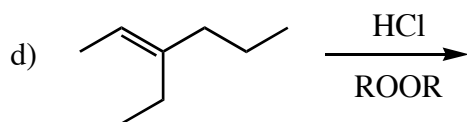
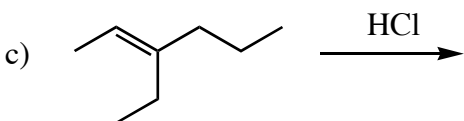
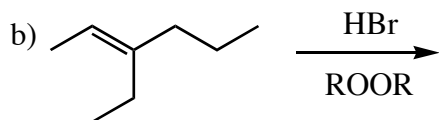
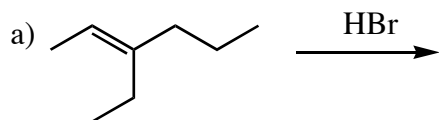


initiation:

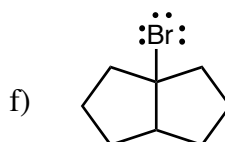
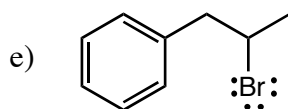
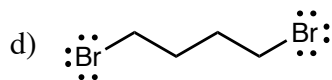
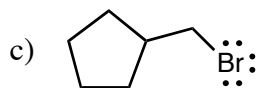
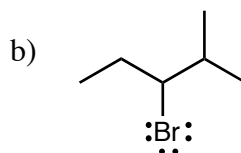
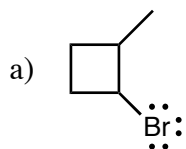
propagation:

termination:

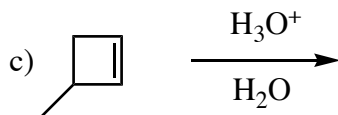
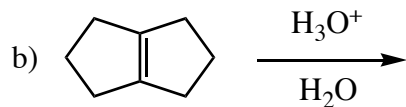
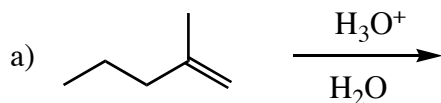
17. Give the radical or carbocation intermediate(s), then the product, in each of the following reactions.



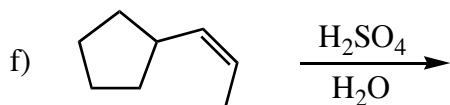
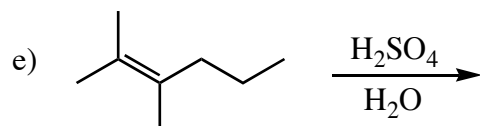
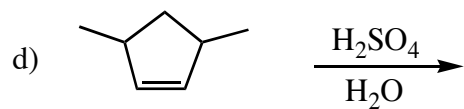
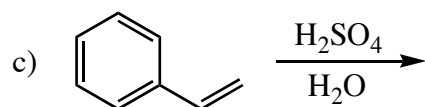
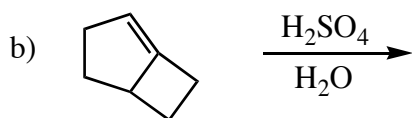
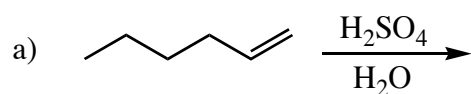
18. From what alkene could each of the following be synthesized using HBr and ROOR? (If it can't be done, explain why.)



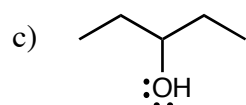
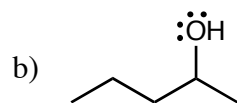
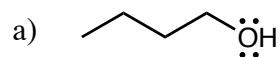
19. Write the mechanism showing how all of the products are formed for the following reactions.

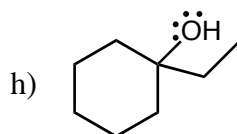
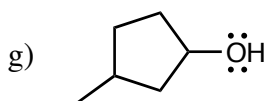
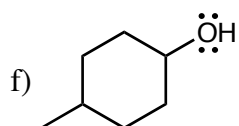
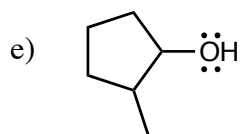
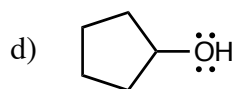


20. Give the products of the following reactions. Watch out for rearrangements!



21. Which of the following alcohols could be made as the only product (no other isomers) of the hydration of an alkene? For those that can, show the alkene starting material. For those that can't, explain why not.





22. In the following problems, the first compound can be converted to the second compound using two different reactions, one after the other. Fill in the missing reagents and the intermediate product. Make sure that each is the ONLY product. You will need reactions from this chapter and from chapters 8 and 9.



23. Fill in the product(s) of the following alkenes reacting with each of the reagents shown.

	$\xrightarrow[2. \text{NaBH}_4]{1. \text{Hg}(\text{OAc})_2, \text{H}_2\text{O}}$	$\xrightarrow[2. \text{H}_2\text{O}_2, \text{NaOH}]{1. \text{BH}_3}$
