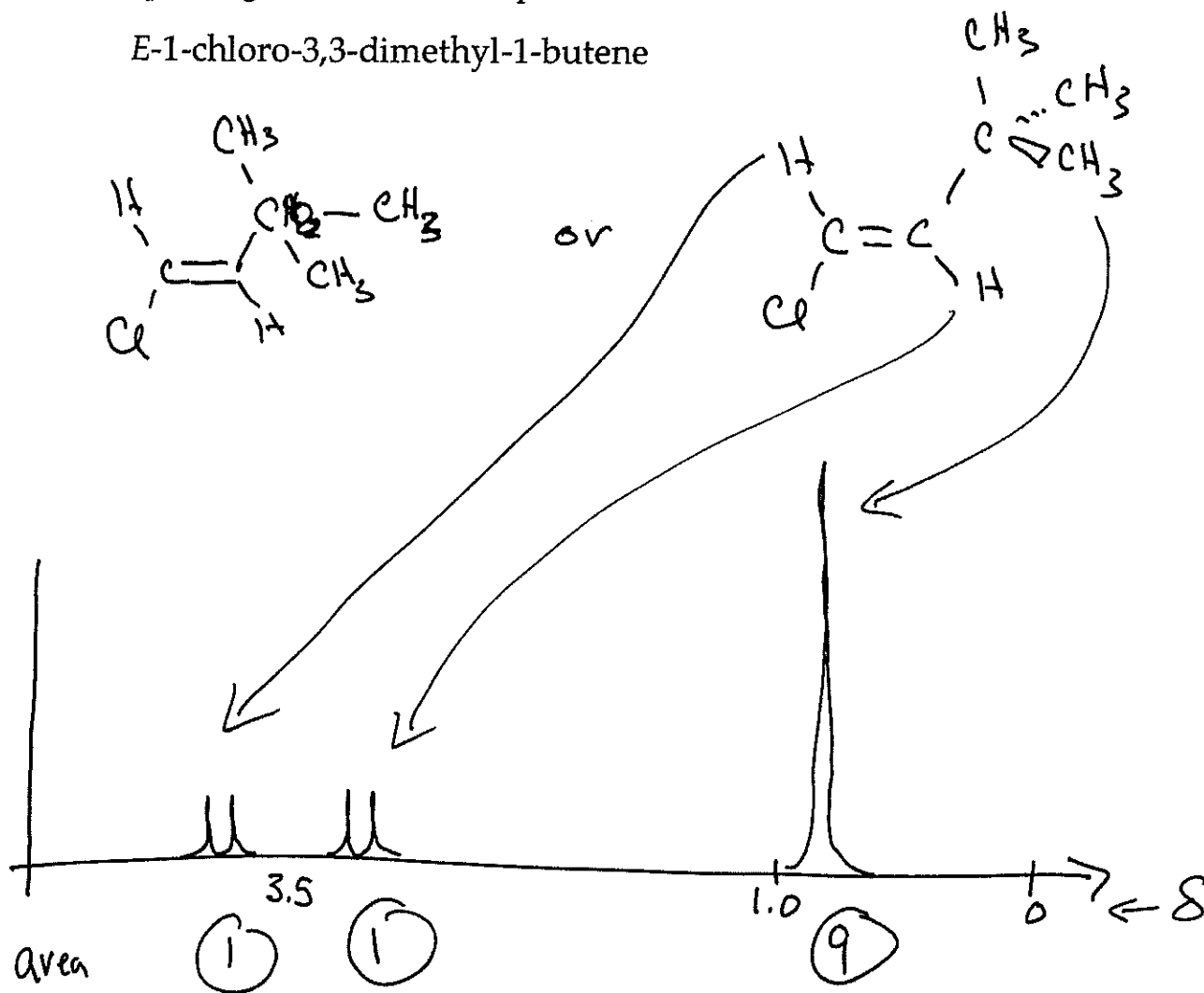


Chemistry 3351-100  
Organic Chemistry/Dr. Barney Ellison  
Thursday: Nov. 20<sup>th</sup> @ 7:00pm → 9:00/2<sup>nd</sup> Exam/Chemistry 142

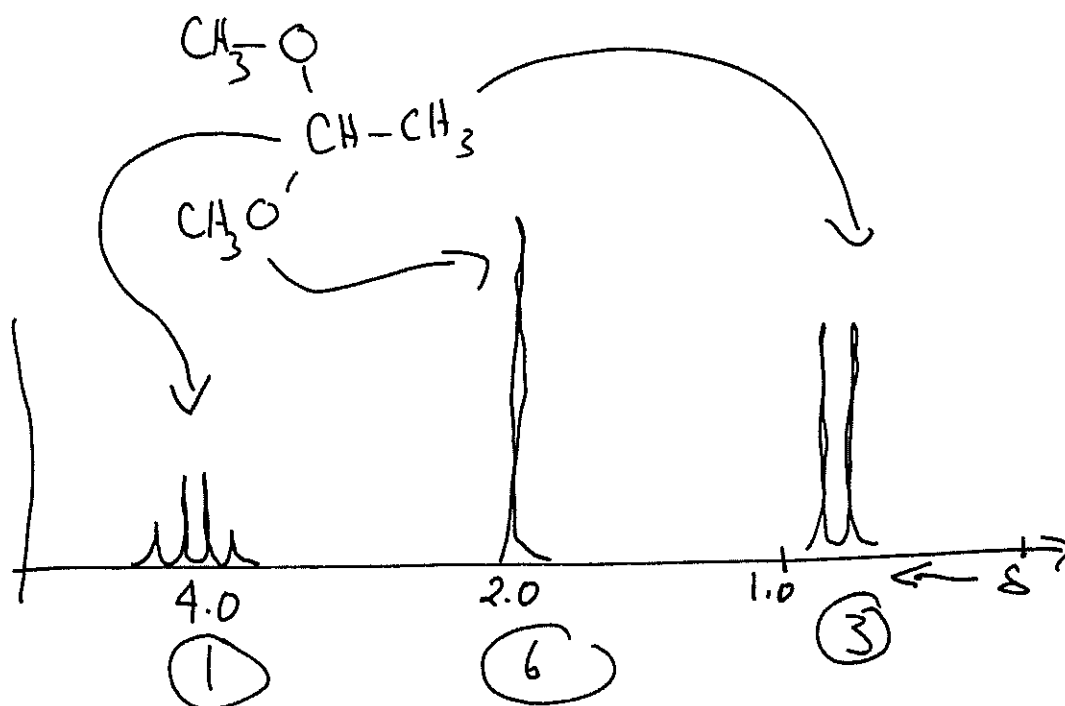
Name: key (please print)

1. (15 pts) Sketch the proton NMR spectrum of each of the following compounds. Be sure to note approximate  $\delta$ , relative areas, and splittings for each of the peaks.

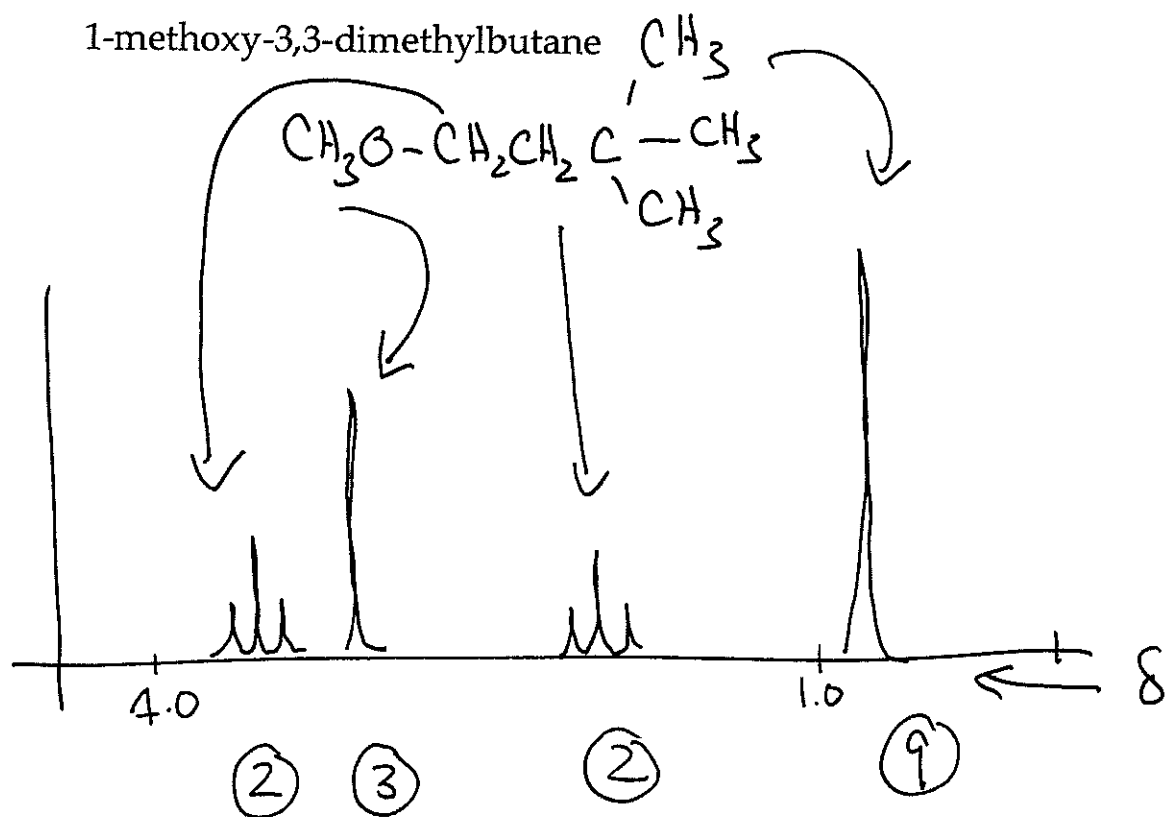
a) E-1-chloro-3,3-dimethyl-1-butene



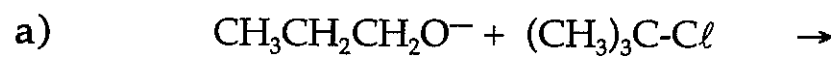
b) 1,1-dimethoxyethane



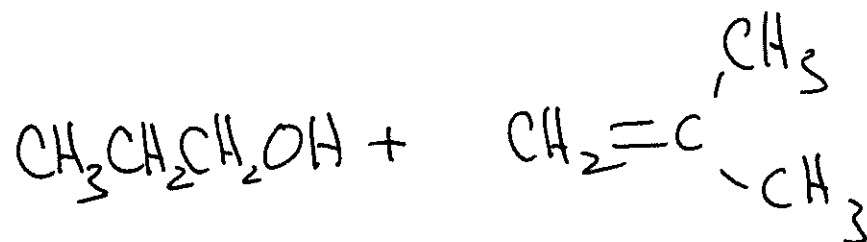
c) 1-methoxy-3,3-dimethylbutane

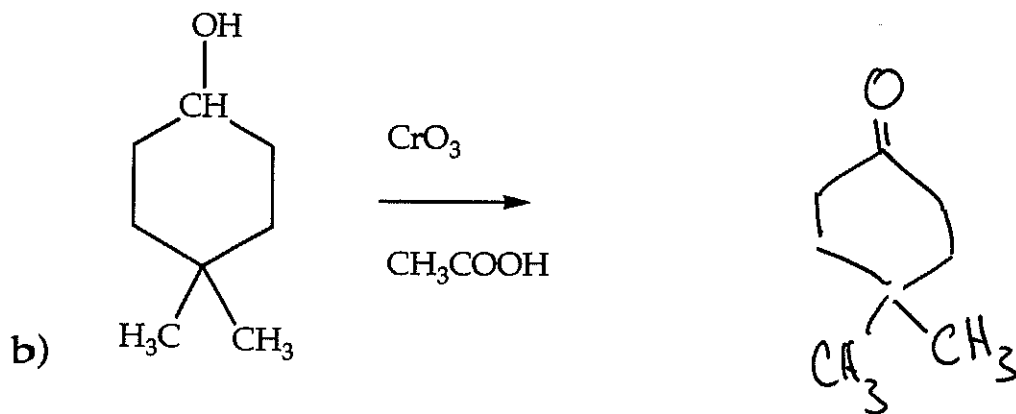


2. (15 pts) Give the principal products form each of the following.

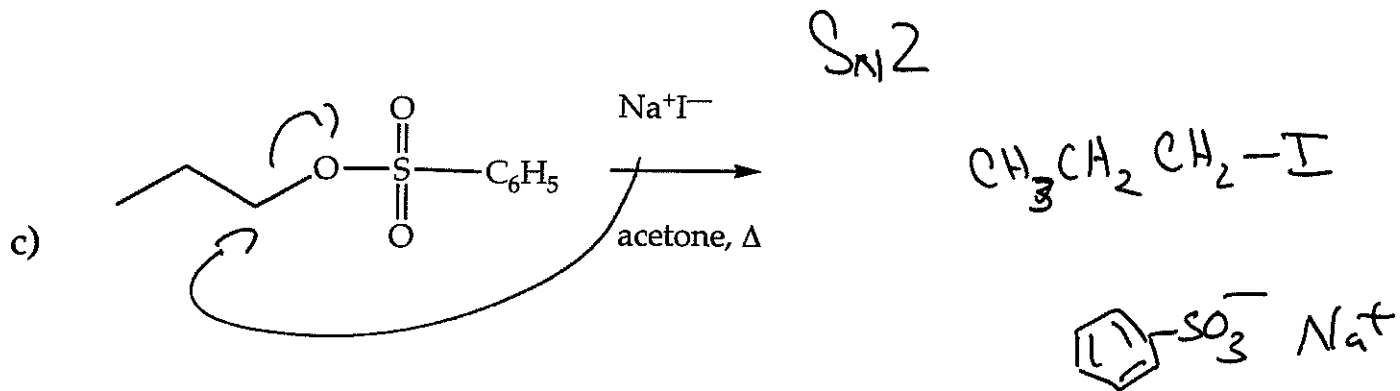


E2

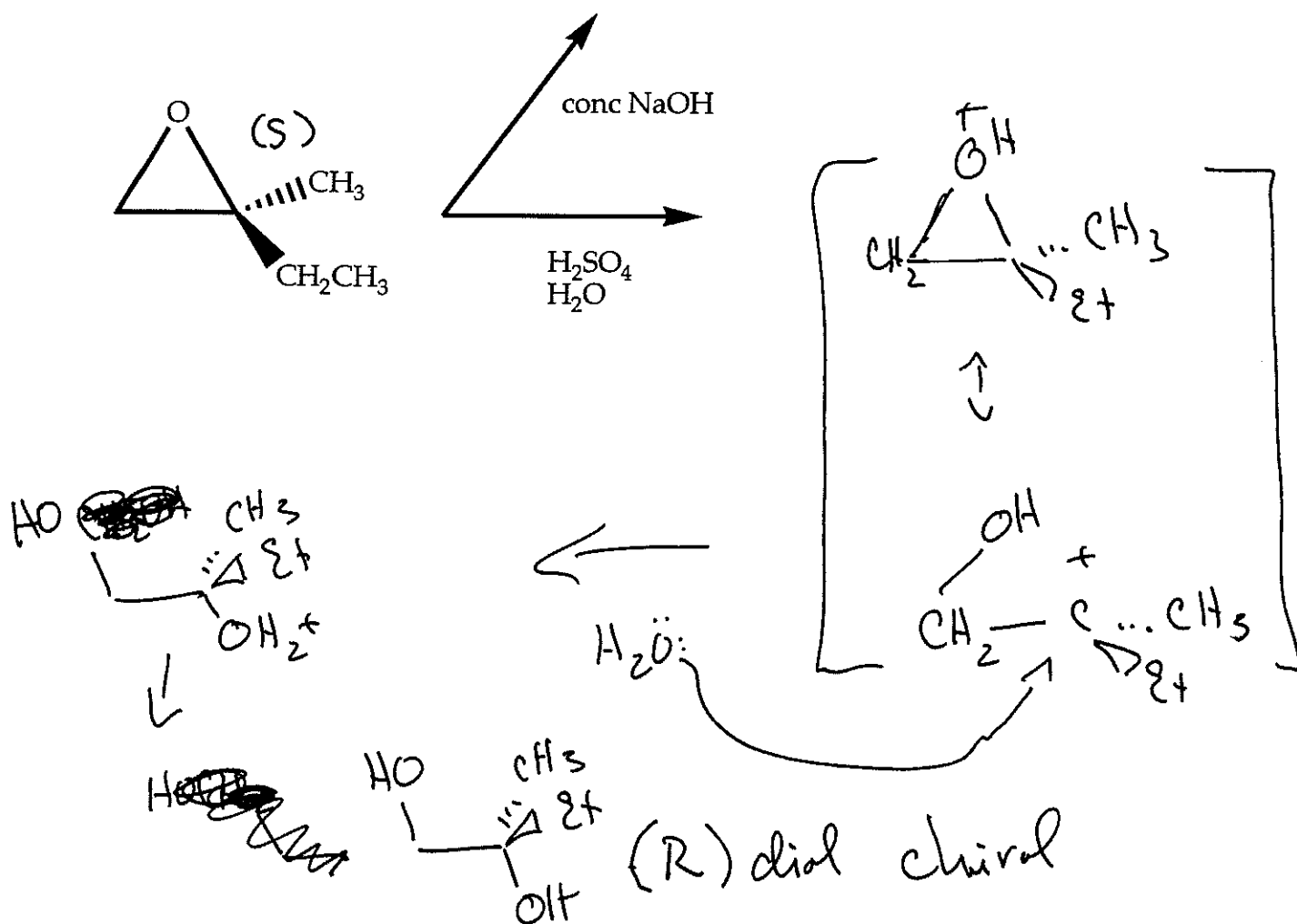
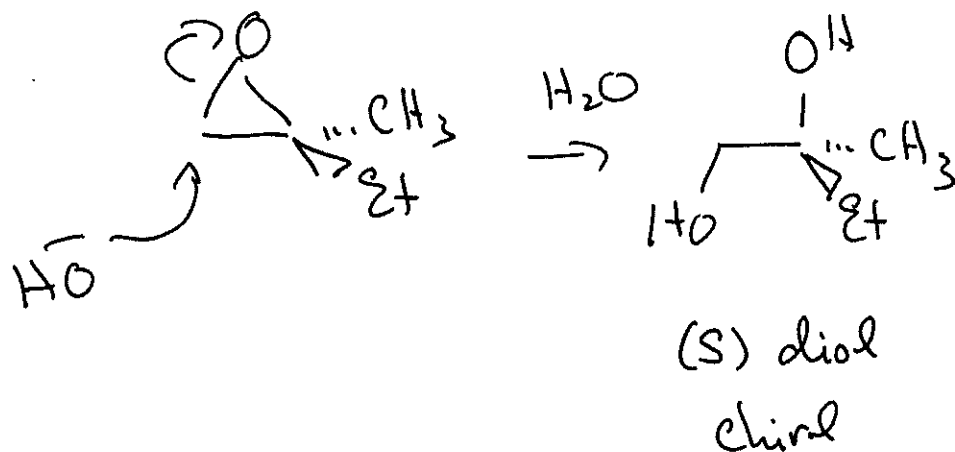




Jones  
oxidation

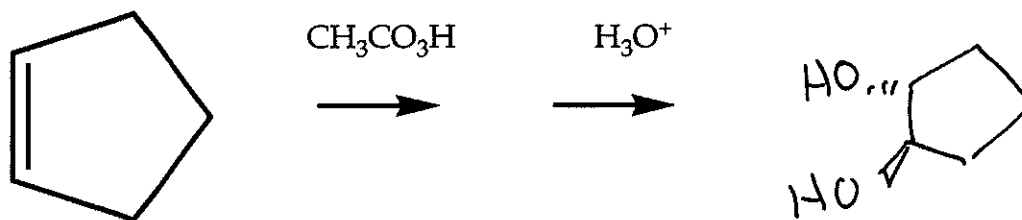


3. (10 pts) (S)-1-bromo-2-methylbutan-2-ol is converted to an optically active epoxide with dilute NaOH. The epoxide ring can be cleaved either in strong base or in acid to give diol products. What is the difference between the products formed by the acidic and basic hydrolysis.

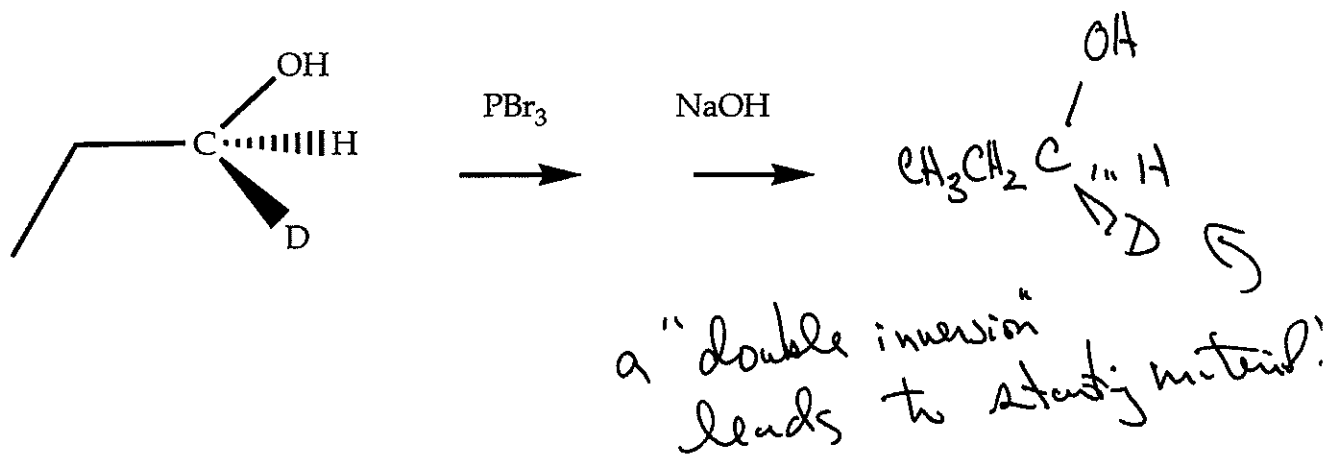


4. (10 pts) Give the principal products of the following reactions.

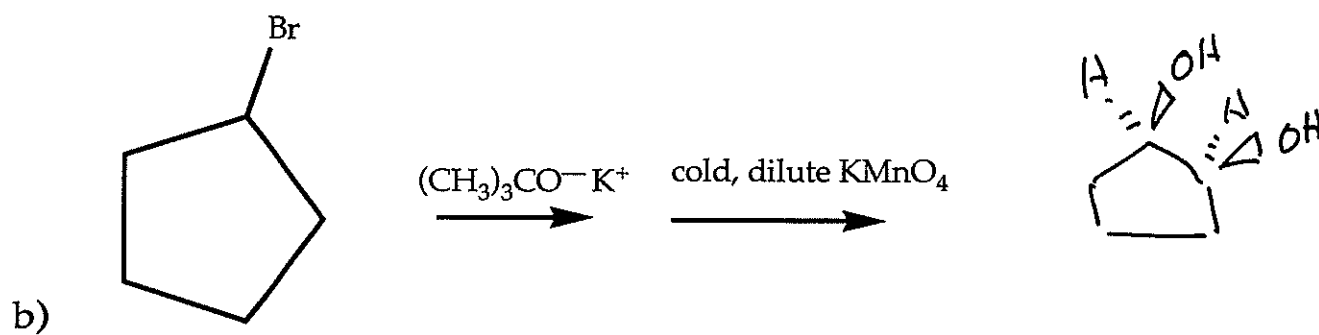
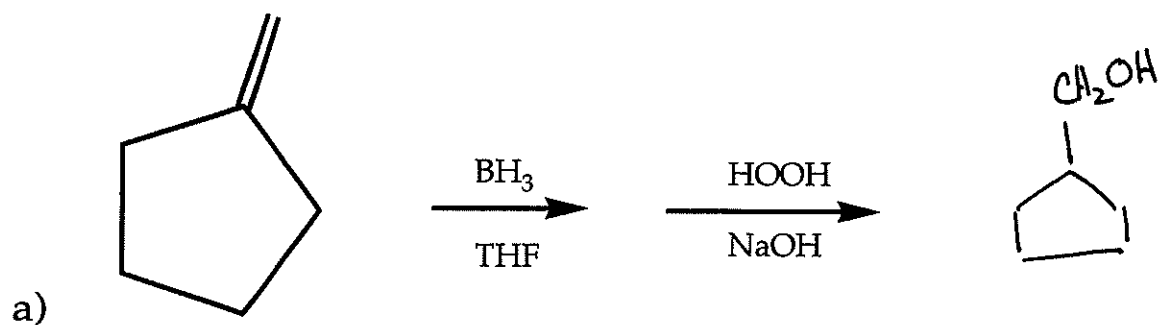
a)

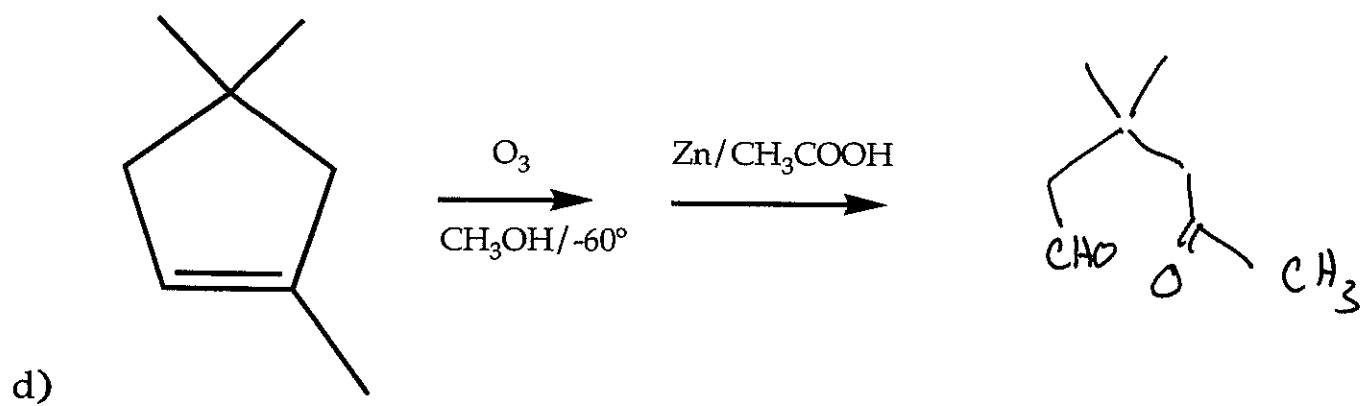
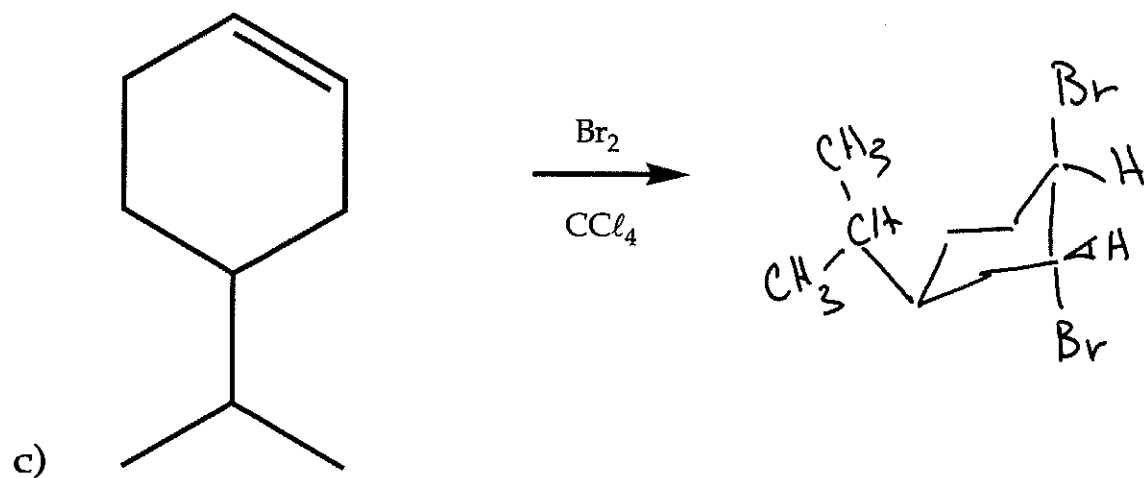


b)



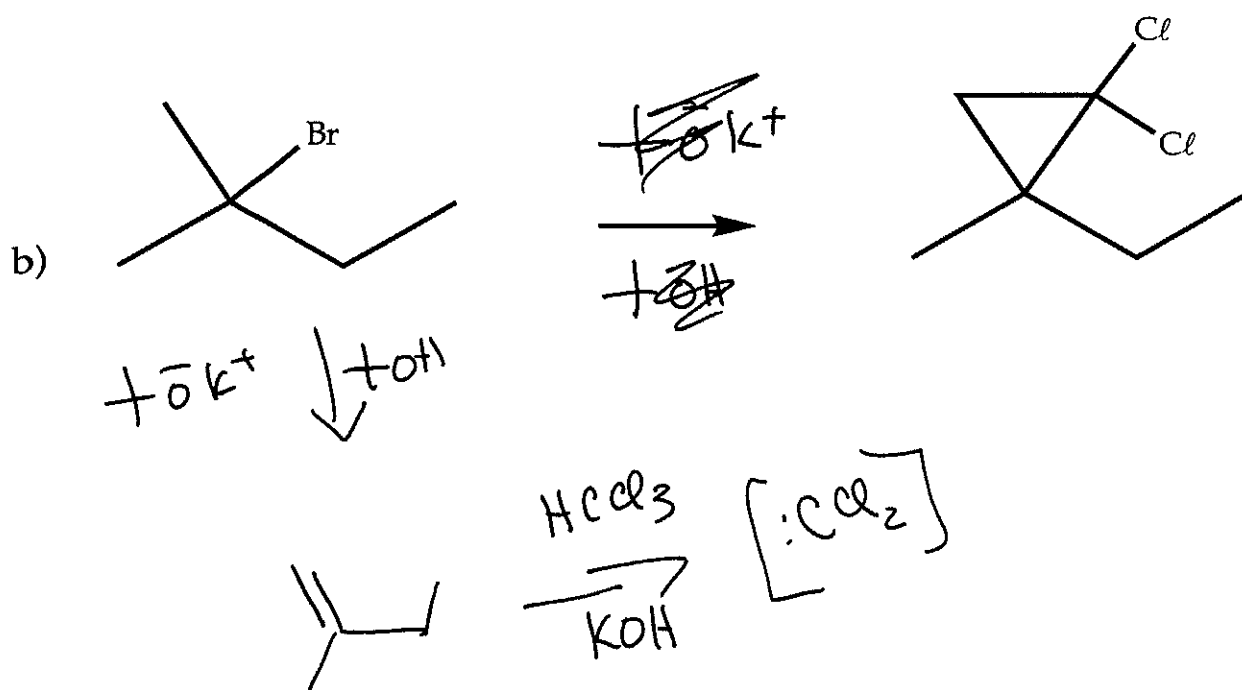
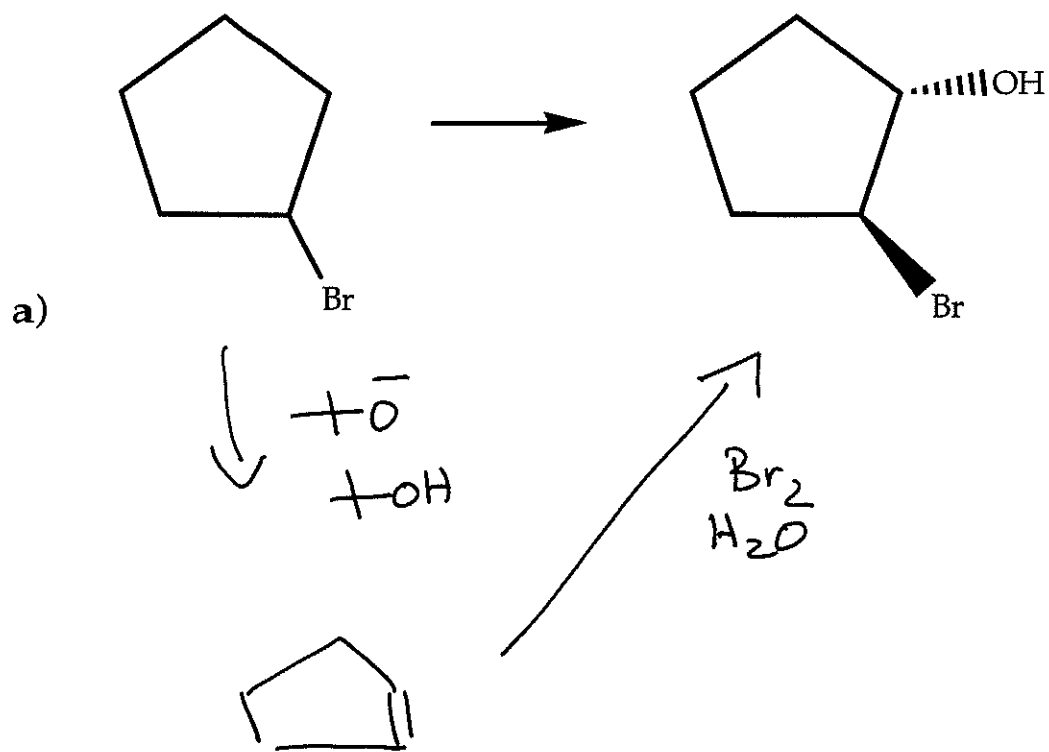
5. (20 pts) Give the principal products of each reaction.



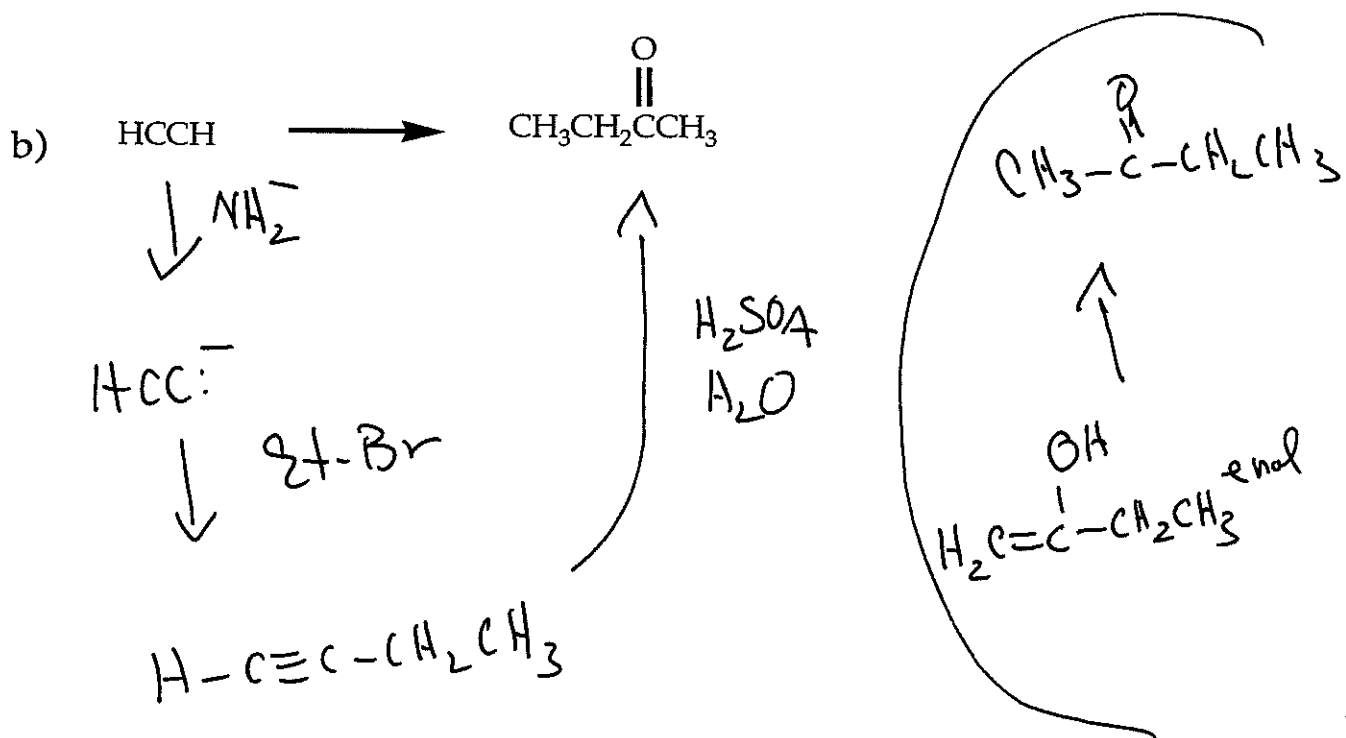
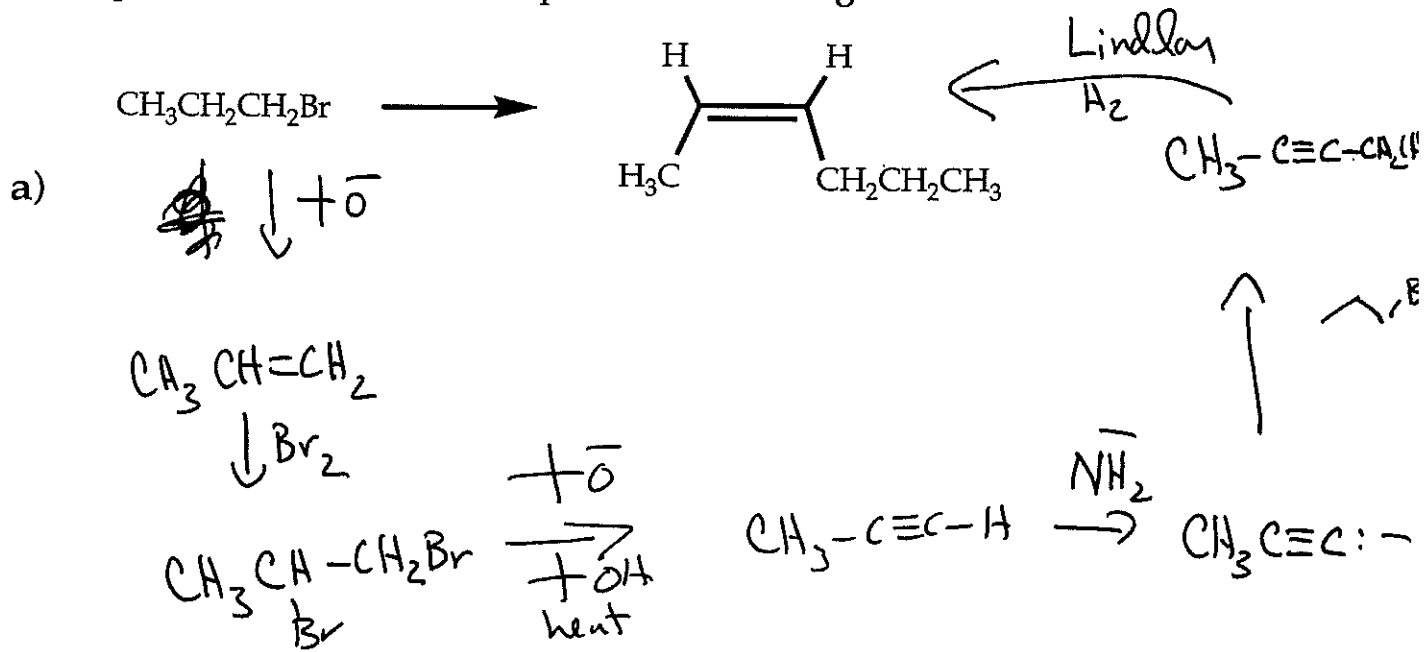




6. (10 pts) Show how to accomplish the following transformations.



7. (10 pts) Show how to accomplish the following transformations.



8. (10 pts) Treatment of *cis*-3-hexene with Br<sub>2</sub> and then KOH in EtOH gives the vinyl halide, Z-bromo-3-hexene. However when the same sequence of reactions is applied to cyclohexene, no vinyl halide (1-bromocyclohexene) is produced. Instead, 1,3-cyclohexadiene is obtained. Explain the difference.

