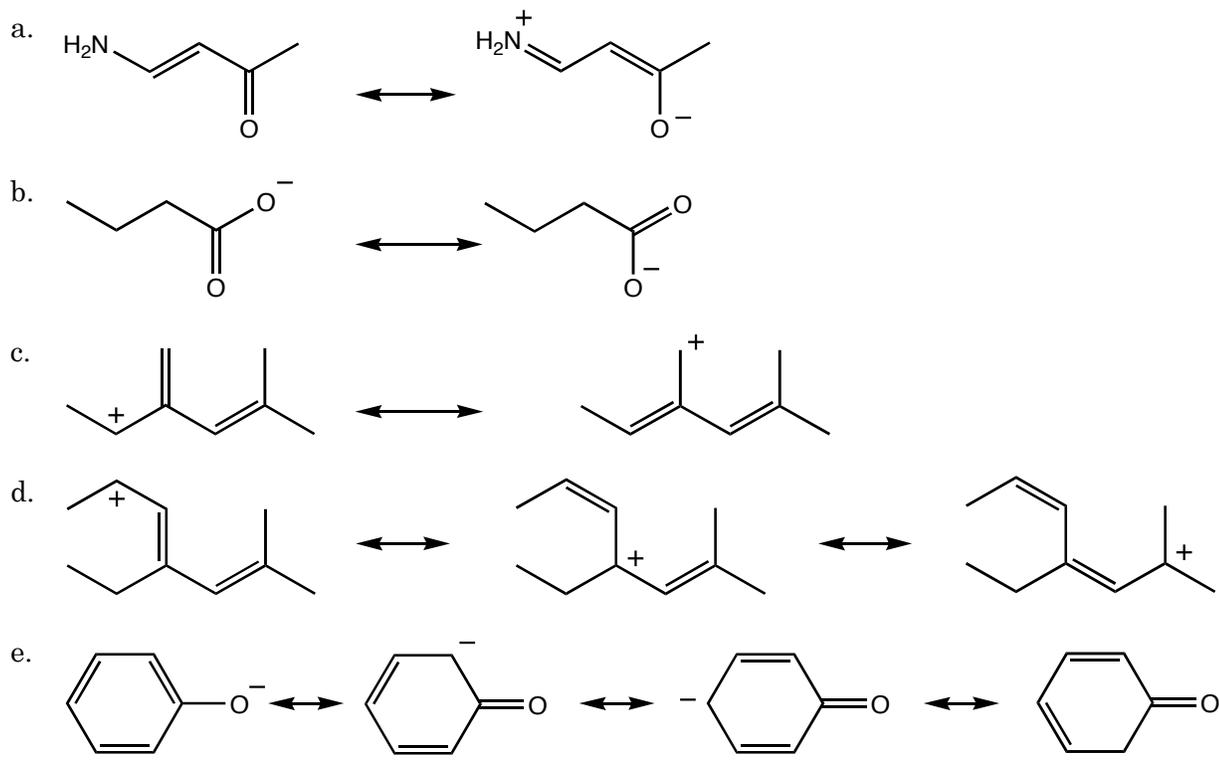
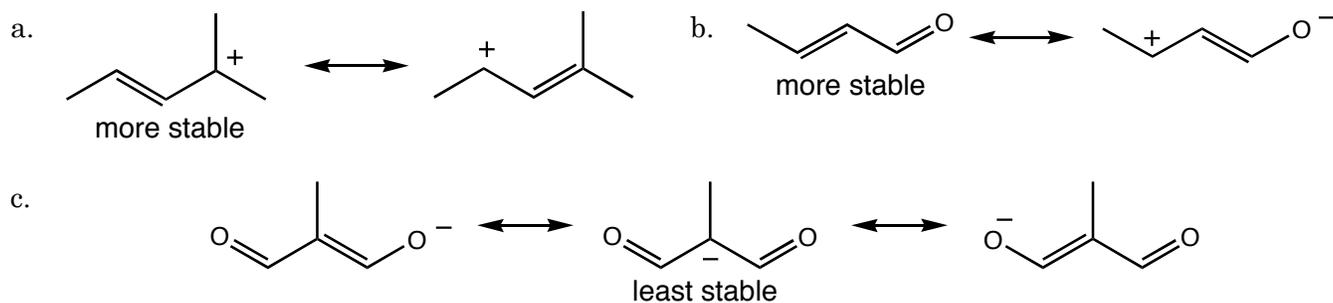


1. Draw resonance structures for the following molecules



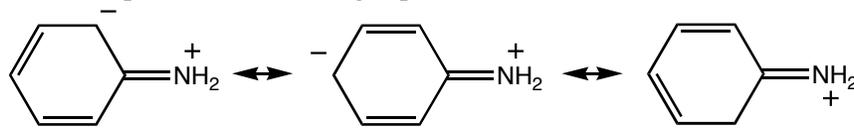
2. Identify the more/most stable resonance form(s) for the following molecules.



3. Using resonance structures, explain why aniline is less basic than cyclohexylamine.



The nitrogen's lone pair on aniline is distributed via resonance through the benzene ring. The nitrogen's lone pair on cyclohexylamine is not distributed by resonance. Thus, the nitrogen on cyclohexylamine is more capable of attracting a proton.

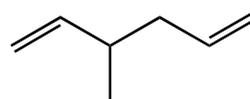


4. Provide names for the following compounds

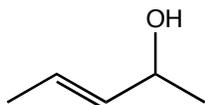
a. 1,3-hexadiene



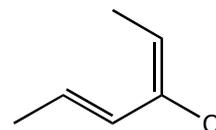
b. 3-methyl-1,5-hexadiene



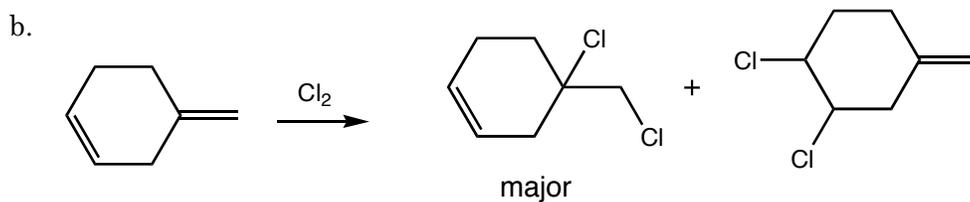
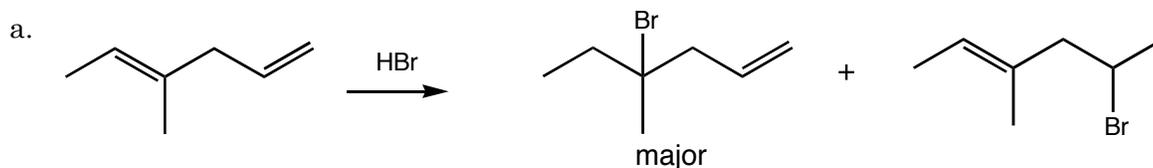
c. 3-pentene-2-ol



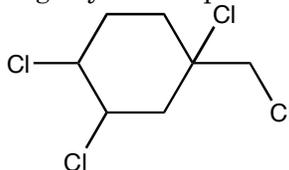
d. 3-chloro-2,4-hexadiene



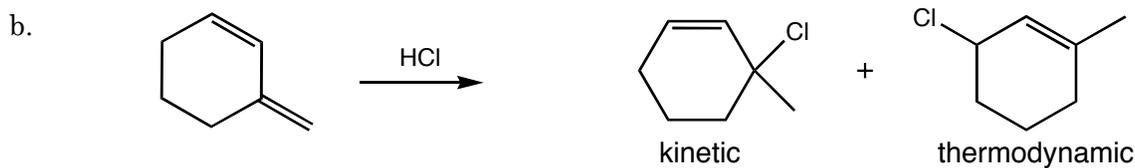
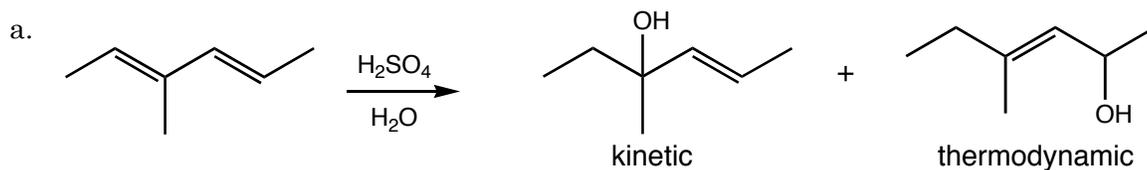
5. Determine the products of the following reactions. List only the products that are present in a reasonably large concentration and indicate which product is the major product.



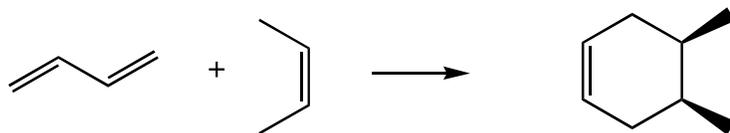
6. For the reaction in 5b, what product might you find present in low concentration?



7. Determine the products in the following reactions, and identify the kinetic and thermodynamic products.

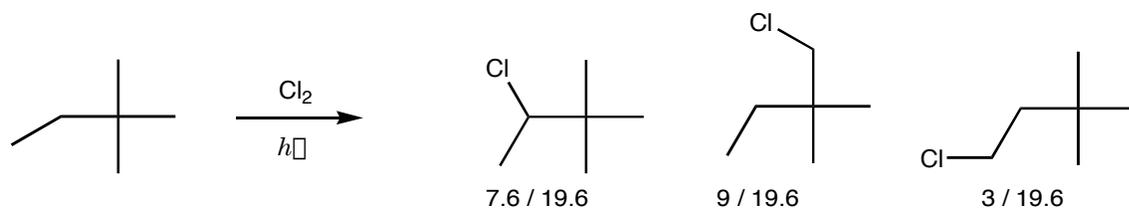


8. Determine the product of the following reaction. Pay careful attention to the stereochemistry of the product.

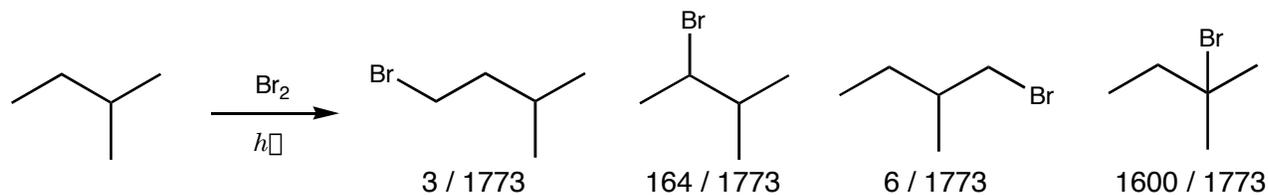


9. Determine the products of the following reactions. Do not include products that account for less than 1% of the material produced. (Important ratios 1600:82:1 and 5:3.8:1)

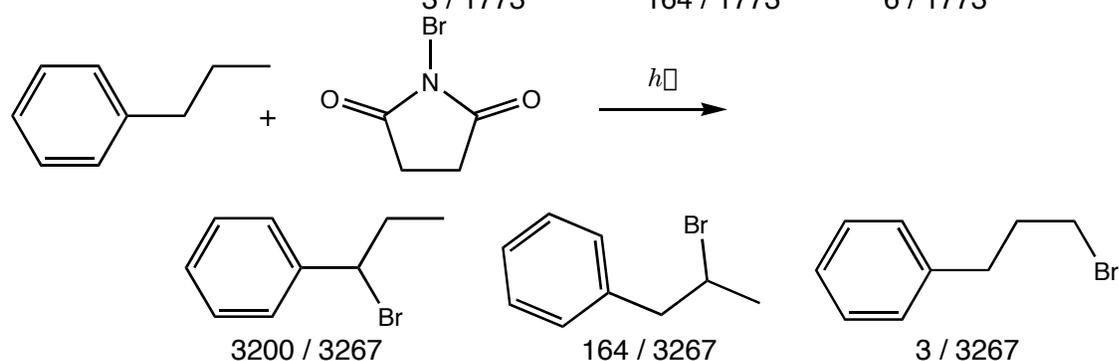
a.



b.



c.



10. Determine the product of the following reaction.



$\text{D} = {}^2\text{H}$

Carbocation rearrangement gives substitution at the benzylic carbon instead of the 2° carbon of the alkene.