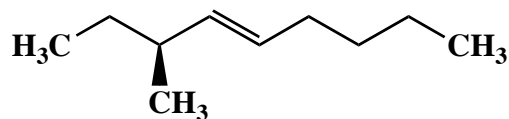


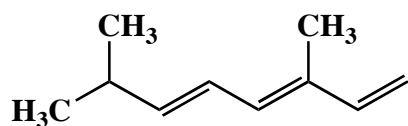
Problem Set 9

1. Use IUPAC nomenclature to write the systematic names for both of the following alkenes.

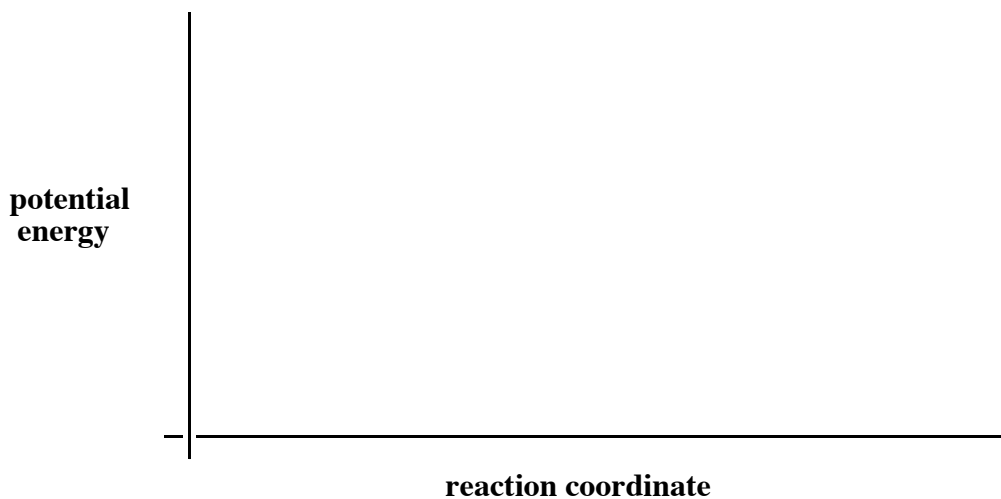
A.



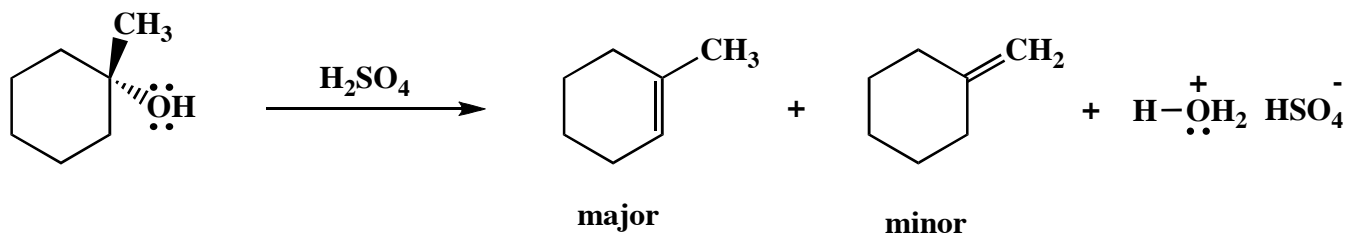
B.



2. Explain clearly why changes in base concentration do not affect the observed reaction rate of an E1 elimination. Draw a reaction-energy diagram (graph of potential energy versus reaction coordinate) to illustrate your answer.



3. Draw the mechanism of the following reaction, using the curved-arrow notation to indicate the reorganization of electron density. Show all intermediates, lone pairs, nonzero formal charges, countercharges, and reversibility or irreversibility. Finally, explain in detail why the observed product distribution is obtained.



4. Draw a pair of three-dimensional conformations of the alkyl bromide **1** to show the two most likely mechanistic pathways for its elimination reaction with the strong base, potassium *tert*-butoxide. Use these conformations and the curved-arrow notation to explain why the observed product is only the *Z*-alkene, and that none of the corresponding *E*-stereoisomer is formed.

