Review #2

Elimination Reactions

Skill 1: Draw arrow mechanisms for elimination reactions

* E2 is a one step, 3 arrow mechanism with alkyl halides.
* E1 is a two-step mechanism with alkyl halides.

Problem 1: Propose mechanisms for these E1 reactions



Problem 2. Propose mechanisms for these E2 reactions. Draw the starting material in an appropriate conformation.



Skill 2: Predict the regiochemistry of the major product of elimination reactions

* For E1 reactions, the more substituted product (Zaitsev) is the major product
* For E2 reactions, first consider which-hydrogen atoms are able to be in the anti-periplanar position
  + If only one b-hydrogen is available, this dictates regiochemistry
  + If there is a choice between b-hydrogens, consider the base used
    - Typical bases lead to Zaitsev as major product
    - Bulky bases lead to Hoffman as major product

Problem 3. Predict all product(s) of the following E2 reactions, and indicate which is the major product(s).



Problem 4. Predict all product(s) of the following E1 reactions, and indicate which is the major product(s).



Skill 3: Determine the major product for an elimination reaction

* First, determine whether the reaction is E1 or E2
* Based on the mechanism, determine the regiochemistry
* Based on the mechanism, determine the stereochemistry

Problem 5. The following reaction can be run under either E1 or E2 conditions. Is the major product the same in each case, or is it different?



Problem 6. Predict the major product(s) of each reaction.

