1. Predict whether the following conditions would mainly promote an  $S_N 2$ ,  $S_N 1$ , E2, or E1 mechanism. Draw the **major product** in each reaction and show stereochemistry where appropriate.



2. Predict the major product below (including stereochemistry).



3. Fill in the boxes with the appropriate products or starting materials. Be sure to show stereochemistry where appropriate.





5. Fill in the appropriate reagents for the following reactions.



6. Provide a detailed arrow pushing mechanism for the following reaction.



7. Give the appropriate starting materials for the following reactions. Remember to show stereochemistry when necessary.



8. Fill in the appropriate reagents for the following reactions. Some may require more than one step.



9. Provide the reagent(s) and starting materials for the following reactions.



10. Provide an arrow pushing mechanism for the following transformation.



Termination (show one):

11. Give the major product for the following reactions. (Remember: Stereochemistry and regiochemistry!).

