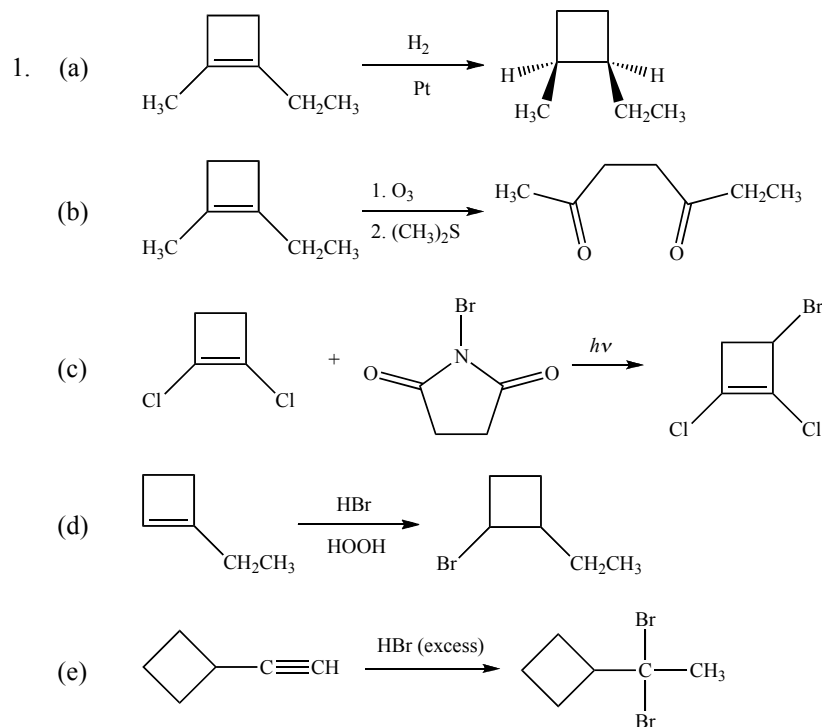


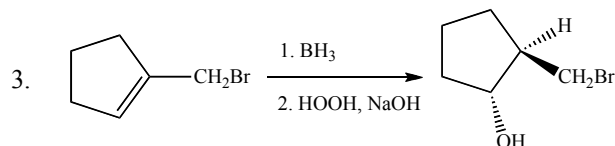
Statistics: High score, average, and low score will be posted on the course web site after exam grading is complete. The exam is ready to be picked up when these numbers are posted.

Some questions have more than one answer, even though only one answer may be listed here.

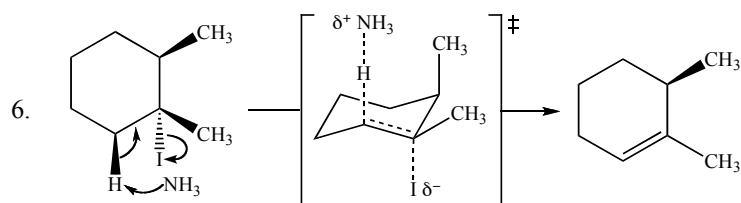
To see the final course grade cutoffs, consult the grading scale on the Chemistry 30A course web page.



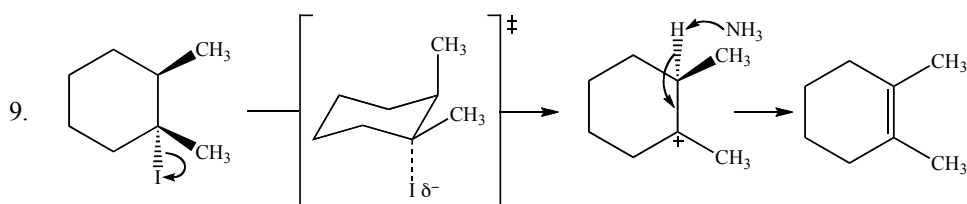
2. A significant difference between the E1 and E2 mechanisms is E1 always involves a carbocation intermediate whereas E2 does not. *Other answers are possible, but this is perhaps the most significant difference.*



4. Syn addition *The new C-H and C-O bonds are formed on the same face of the alkene pi bond.*
5. Anti-Markovnikov *The new C-H bond is formed at the more highly substituted end of the alkene.*



7. Hofmann
8. Z *The alkene is trisubstituted, so cis and trans are ambiguous and not used.*



10. E2. This is the most likely mechanism for this reaction because NH_3 is sufficiently basic, I^- is a superior leaving group, and a periplanar β -hydrogen is present.

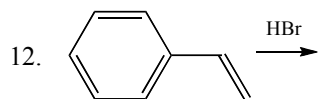
--or--

E1 This is the most likely reaction mechanism because NH_3 is not sufficiently basic to cause E2.

11. Many answers are possible for each part.

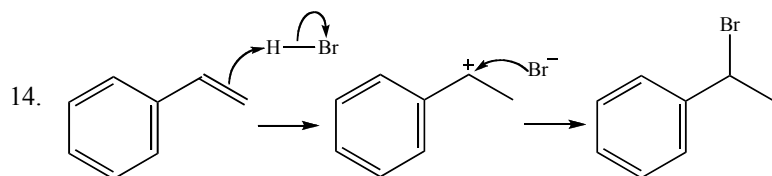
(a) A significant similarity between the reactions of alkenes and alkynes is both undergo electrophilic addition.

(b) A significant difference between the reactions of alkenes and alkynes is alkenes add one equivalent of electrophile whereas alkynes add two equivalents of electrophile.

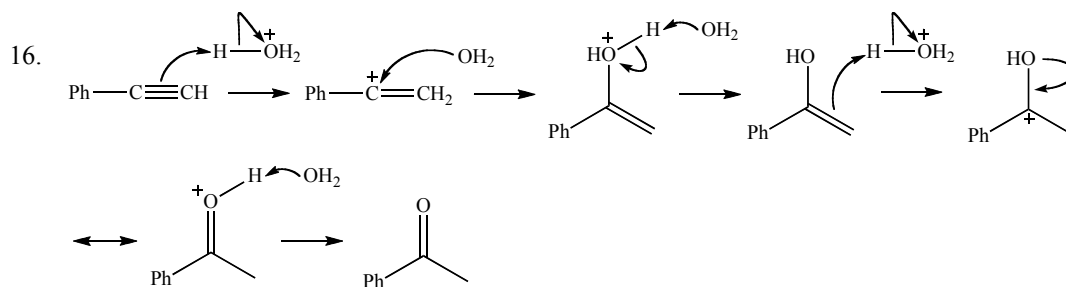


13. Reason #1: HBr is a stronger acid (more electrophilic) than HCl.

Reason #2: The carbocation intermediate in the styrene reaction is more stable than in the propene reaction.

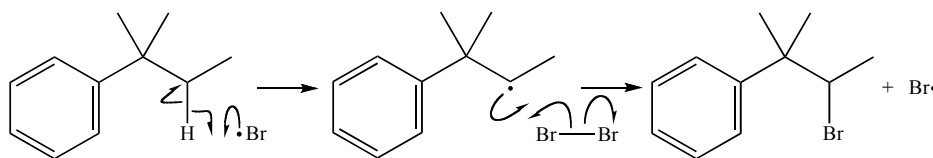
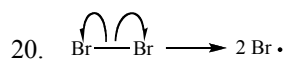
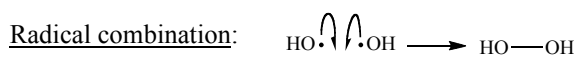
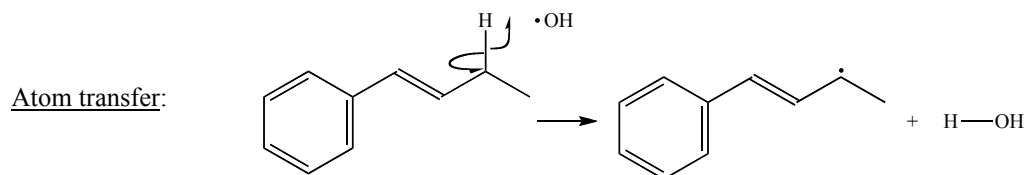
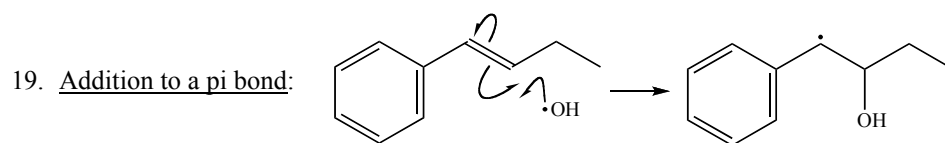
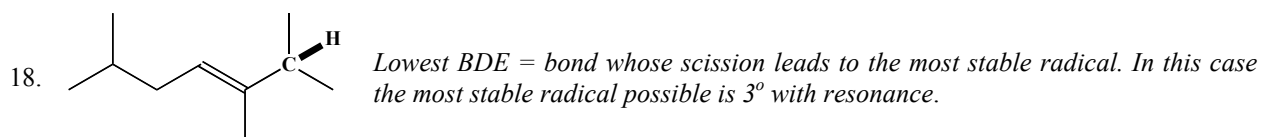


15. Yes *The H of HBr attaches to the alkene carbon that has the most hydrogens to begin with.*



17. (a) Reaction stops *Water is not sufficiently acidic to protonate the alkyne pi bond, so the reaction never starts.*

(b) Faster *The carbocation intermediates are more stable due to additional resonance contributors.*



21. The main phenomenon that allows a small quantity of CFC to destroy a large quantity of ozone in the ozone layer is a chain reaction.

