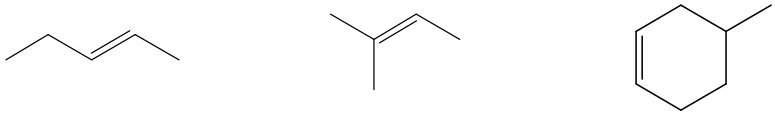
CHEM1102 Problem Sheet 2 (Week 2)

Work through the ChemCAL modules "*Alkenes, Benzene and Alkynes*" and "*Elimination and Electrophilic Addition Reactions*".

1. Give the stick structures of the following compounds.

   (a) 2,3,5-trimethyl-4-bromooctane
   (b) *cis*-1,3-dimethylcyclobutane
   (c) 2-methyl-2-pentene

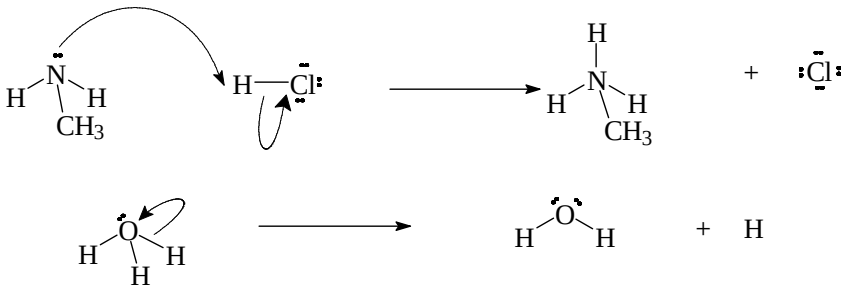
2. Name the following compounds.



3. Draw the structures of the following compounds.

   (a) 3-chloro-2,3-dimethyl-1-butene
   (b) 3-ethyl-3-hexene
   (c) (*Z*)-2-butene
   (d) (*E*)-2-butene
   (e) (*Z*)-2-methyl-3-hexene

4. All atoms, bonds and lone pairs are shown in the structures below. Use your knowledge of valency and arrow notation to add formal charges, $\oplus$ and $\ominus$, on the structures where it is appropriate. Add partial charges, $\delta\oplus$ and $\delta\ominus$, to the neutral reagents.



5. Classify the two starting materials (below) as electrophile, nucleophile or neither. What kind of reaction is this? Draw in appropriate partial charges $\delta\oplus$ and $\delta\ominus$ and curly arrows showing the mechanism of the reaction.