Chemistry 2, HW 23

Some common type of chemical reactions in organic chemistry:

Alkanes: combustion reaction, they are not very reactive, but can react with halogens (like Br_2 or Cl_2) in presence of sunlight or UV light, it is going to be a substitution reaction, where an atom or group is substituted with another atom or group.

Unsaturated hydrocarbons, Alkenes and Alkynes: addition reaction (electrophilic addition mechanism), where molecule A-B is added either side of C=C or C (triple bond) C. Examples of the reactions:
Hydrogenation + H2, forms an alkane
Hydration + H2O, forms an alcohol
Polymerization alkene monomers join together to form polymer chain
Hydrohalogenation + HCl, HBr etc., forms haloalkanes

Alcohols: a primary alcohol (OH group attached to carbon that is attached to one other carbon, for example CH_3CH_2OH) can be oxidized using acidified K_2CrO_7 or $KMnO_4$), final product is carboxylic acid.
In the presence of heat and acid – dehydration of alcohol, product is an alkene.
Esterification alcohol plus carboxylic acid → ester

Carboxylic acids and amines (weak acids and weak bases): ionization in water, neutralization
Reduction reaction of a carboxylic acid forms an alcohol

Aromatic compounds have benzene ring (C_6H_6) in their structure, undergo substitution reactions (for example a chlorine or bromine atom replaces a hydrogen atom on the benzene ring).

Questions:

1. Write chemical reaction where an alkene of your choice reacts with hydrogen halide (such as HBr or HCl).
2. Write rection where benzene is one of the reactants, and C_6H_5Cl is one of the products.
3. Write reaction where you synthesize an alcohol from haloalkane.