## Some Organic Synthesis Practice Problems:

Starting from 1-hexene, 1-butyne, bromoethane, iodomethane and any reagent needed (you do not need to use all of these compounds), synthesize:

CI CI 
$$CHCl_3$$
,  $KOH$ 

Li,  $NH_3$ 
 $H_3C-C \equiv C-CH_2CH_3$ 
 $NaNH_2$ ,  $NH_3$ ,  $CH_3I$ 
 $H-C \equiv C-CH_2CH_3$ 

1) 
$$BH_3$$
  
2)  $NaOH$ ,  $H_2O_2$   
 $H_2O$   
 $H_3CH_2CH_2CH_2C-C\equiv CH$   
 $NaNH_2$   
 $Br_2$   
 $Br$ 

## 3.

octane 
$$\begin{array}{c} H_2, \ Pd \\ \hline \\ & H_3CH_2CH_2CH_2C-C \equiv C-CH_2CH_3 \\ \hline \\ & NaNH_2, \ NH_3 \\ & CH_3CH_2Br \\ \hline \\ & H_3CH_2CH_2C-C \equiv CH \\ \hline \\ & see \ above \\ \end{array}$$

OH 1) 
$$OsO_4$$
 2)  $NaHSO_3$  Li,  $NH_3$   $H_3CH_2C-C\equiv C-CH_2CH_3$  OH (racemic) 
$$NaNH_2, NH_3 \\ CH_3CH_2Br$$
 HO OH  $H_3CH_2C-C\equiv CH$  1-butyne