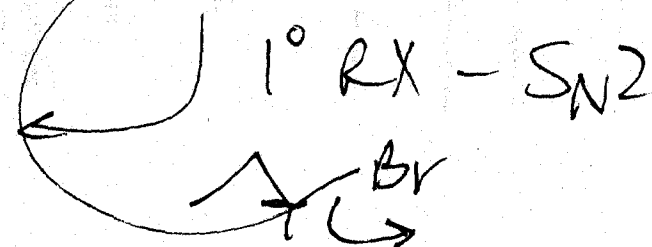
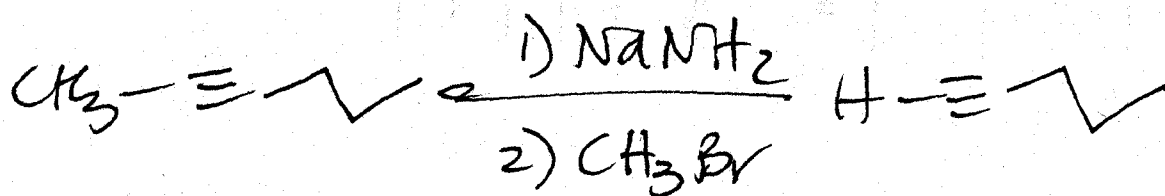
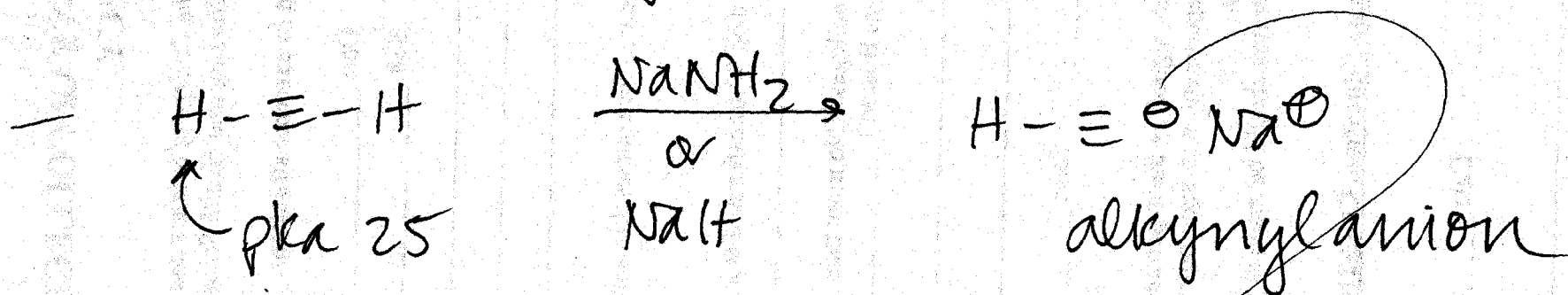
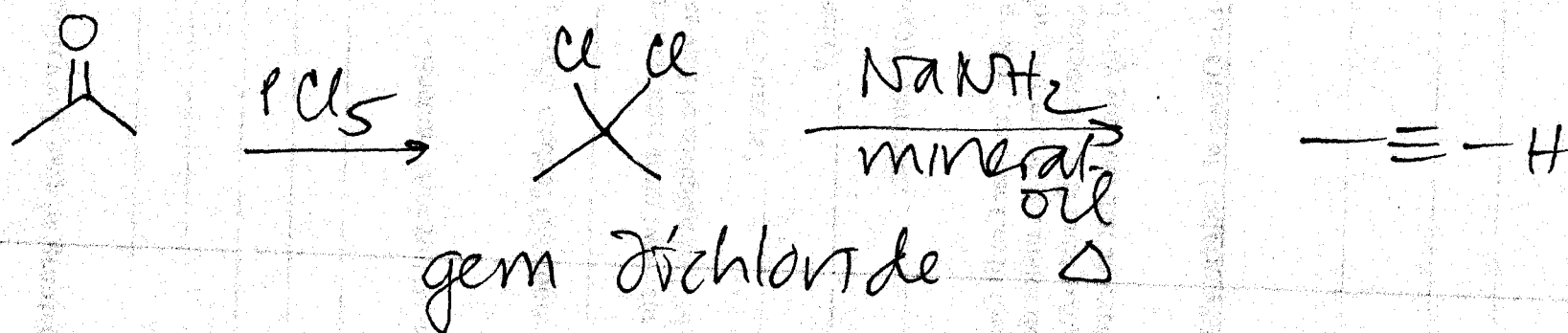
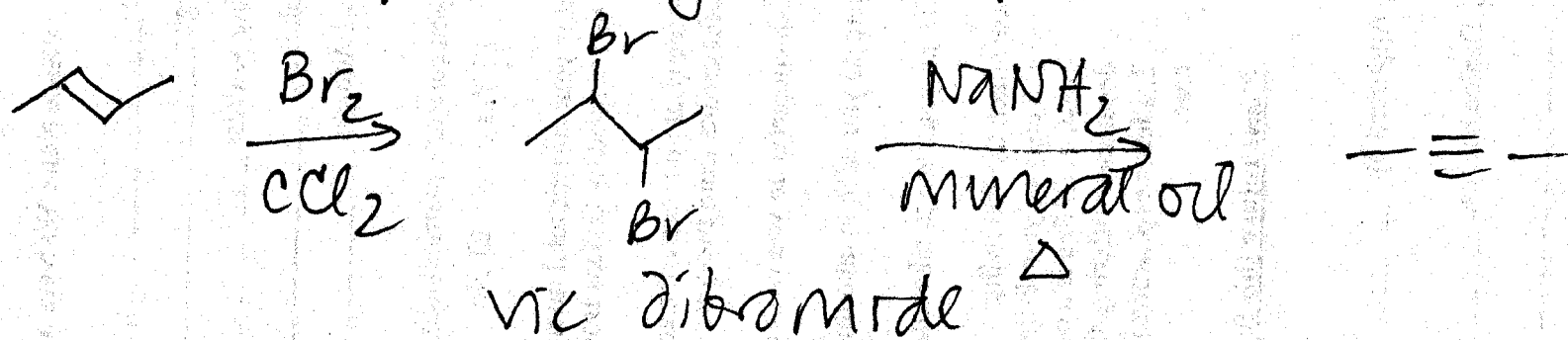


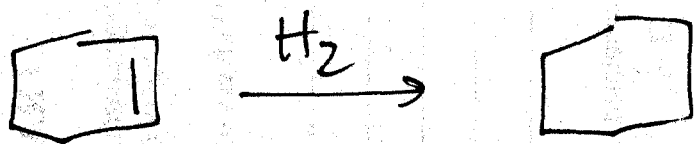
Synthesis of Alkynes

- Double dehydrohalogenation



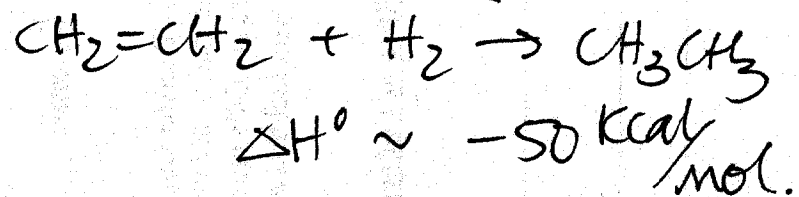
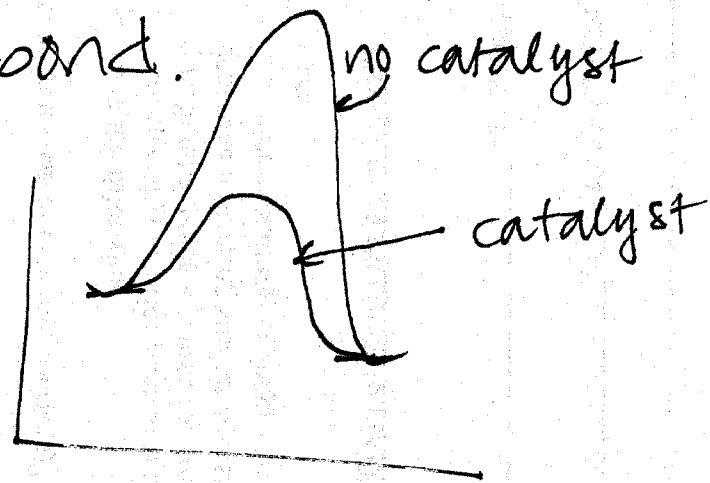
On to the first Addition Rxn!

Hydrogenation - the addition of H_2 to a π bond.



Act too high - 88, toss in a catalyst.

Pt, Pd, Ni, Rh...



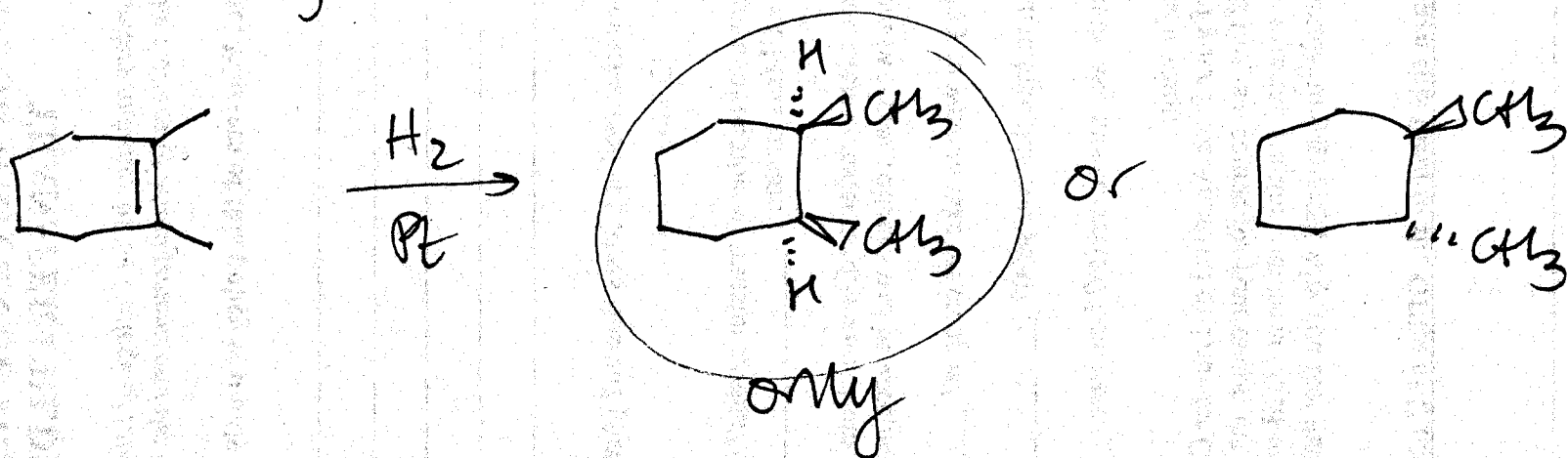
H_2 gets adsorbed onto surface of catalyst.
so does the alkene.

can study heats of hydrogenation + compare alkene stabilities (even nonisomeric ones)

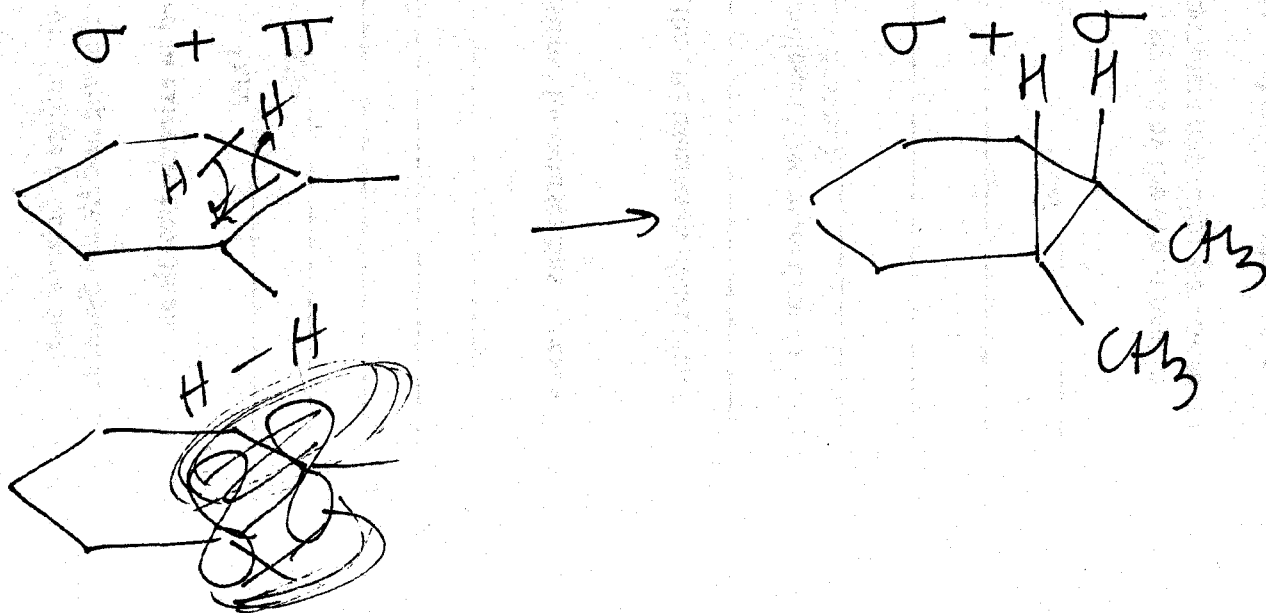
ethene < monosub. < disub. < trisub < tetrasub.
 $Z < E$

stereochemistry of hydrogenation

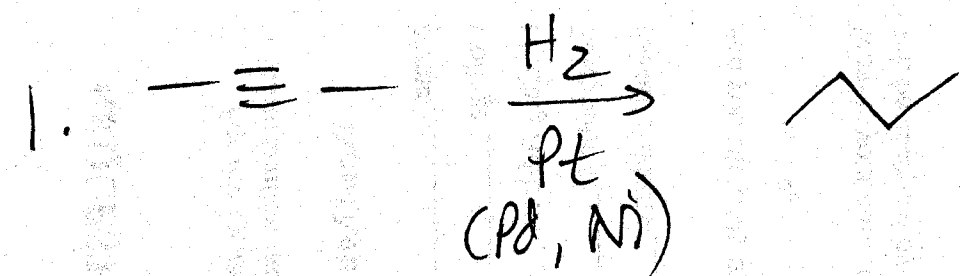
- syn addition - adding on same side
- anti addition - adding from opposite sides
- totally random (both ways happening)



\Rightarrow syn addition

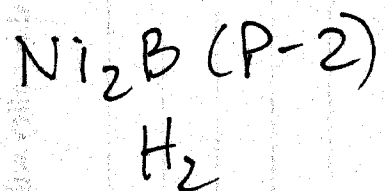


Hydrogenation of Alkynes -



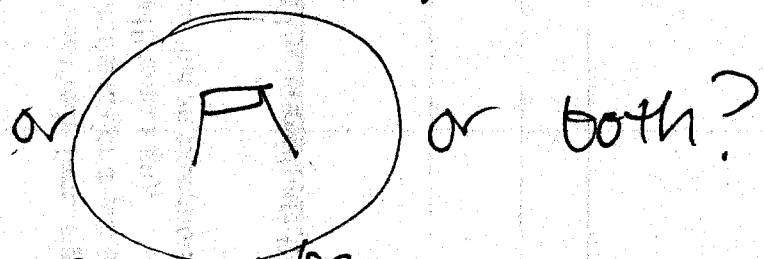
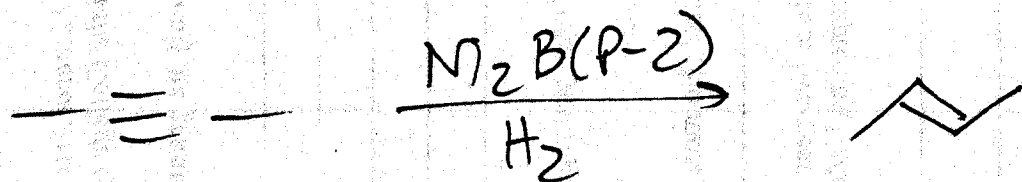
alkyne reacts
twice (2 eq. of H_2)

2. use a different catalyst.



Lindlar's catalyst:

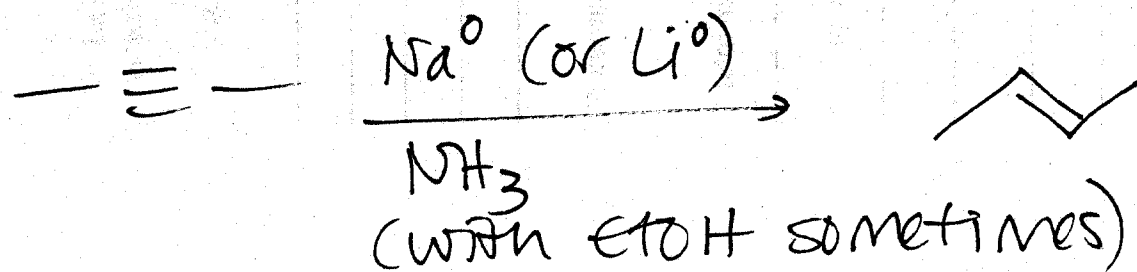
(H_2 , Pd/CaCO_3 , quinoline)



remember -

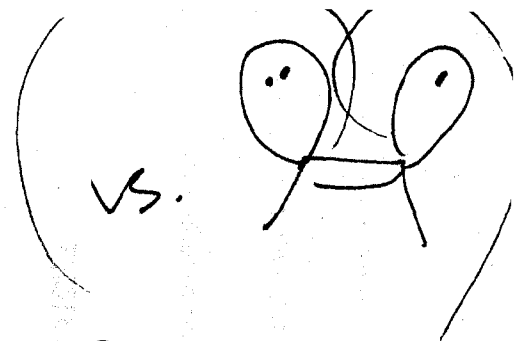
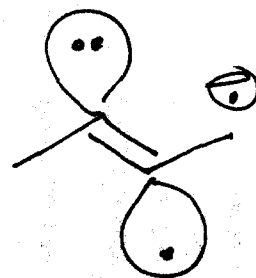
it's a syn addition.

3. what if we want the (E) alkene?

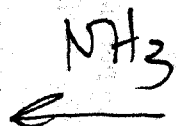
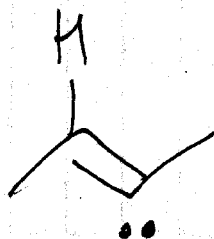
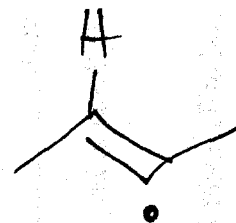
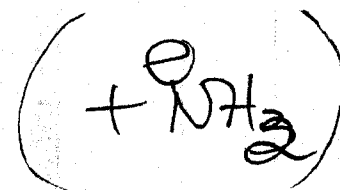
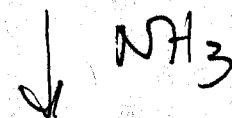
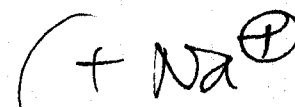


"dissolving
metal
reduction"

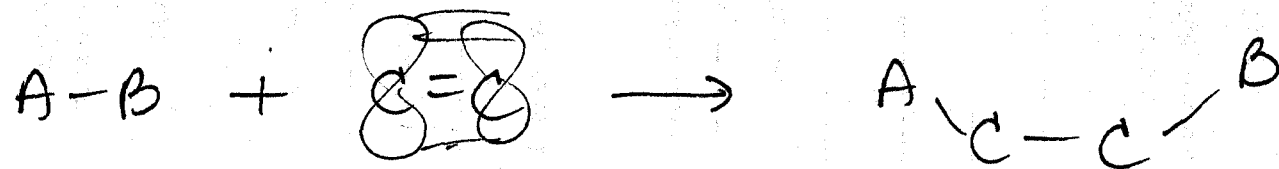
works via e^- transfer



a radical anion



Eliminations + Additions are "mirror images"
 make π bonds use up π bonds



generally energetically favorable $\sigma + \pi \rightarrow 2\sigma$