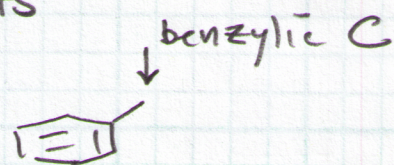


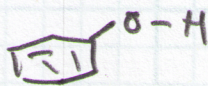
## Chemistry of Benzene Substituents

Benzylic Resonance

|| Oxidat<sup>ns</sup>/Reductions

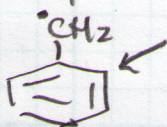
Phenols: Prep

Reactions

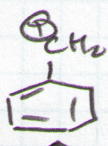


Claisen Rearr: Electrocyclic Rearr w/ benzene ring

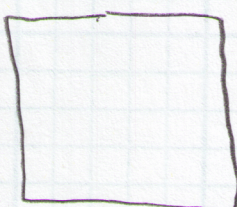
Benzylic



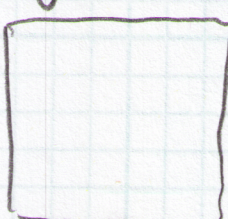
radical



cation



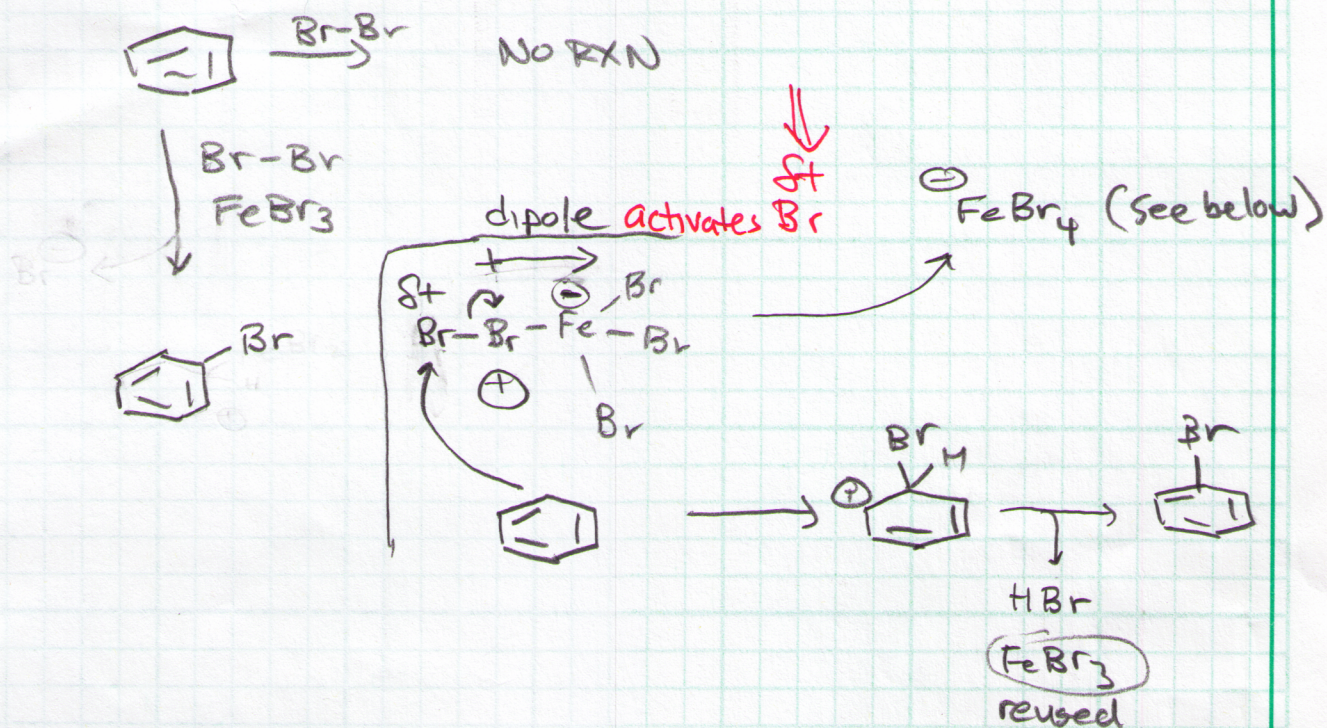
anion



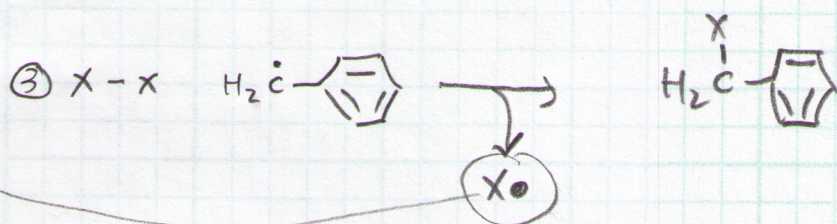
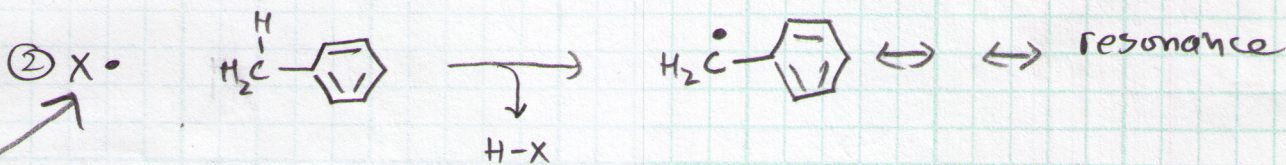
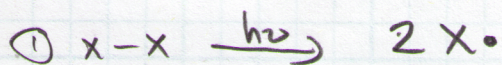
Draw a resonance structure of each where the arrow C has either the (•), (+), or (-) charge on it.

The benzylic C is <sup>most</sup> reactivity in the systems above so the aromaticity stabilization is NOT disrupted!

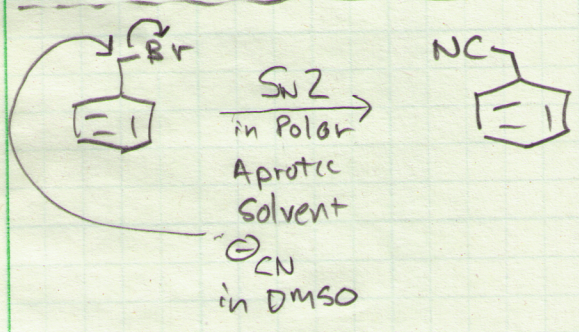
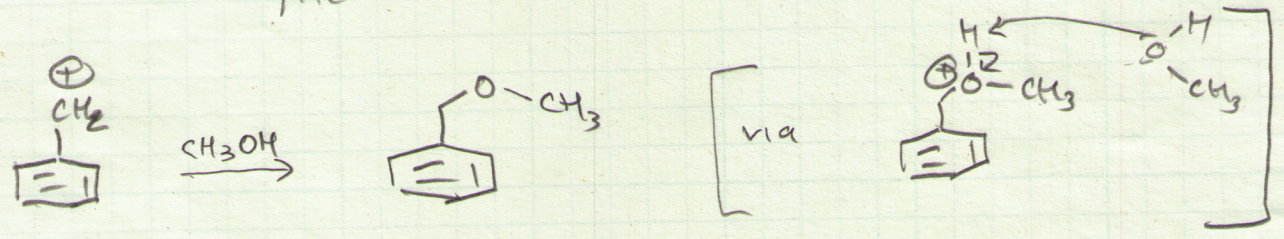
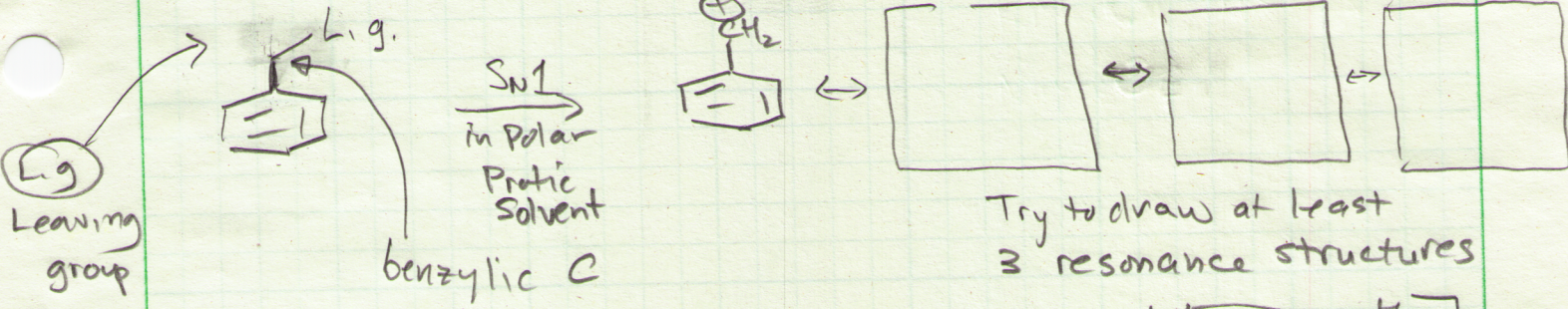
## Stability of Aromaticity. Recall



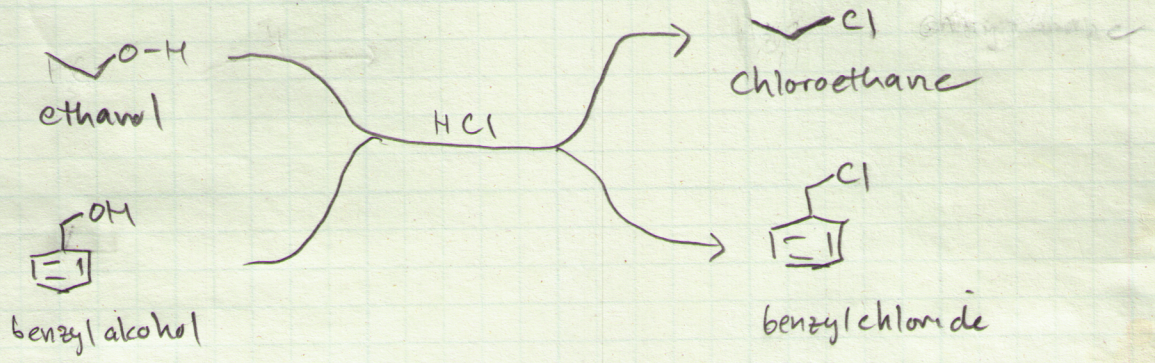
## Halogenation X-X

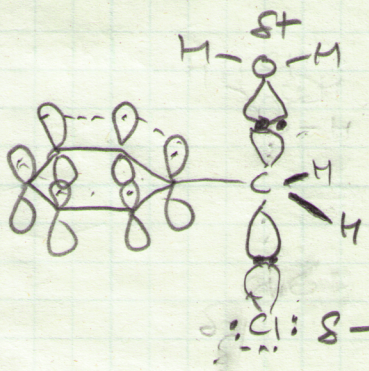


# Nucleophilic Substitut<sup>n</sup> Rxns at Benzylic Center.



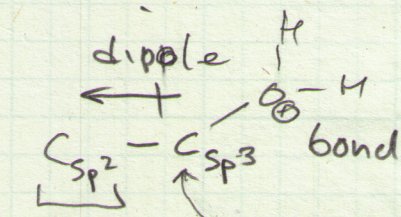
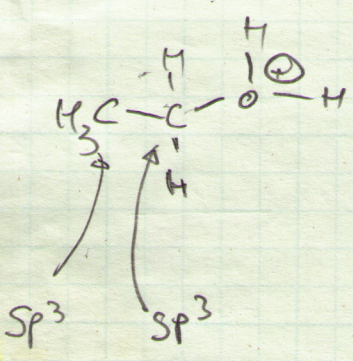
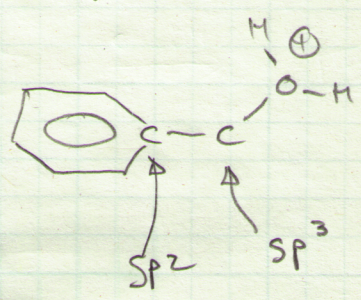
Which is faster? This question is asked as a prelude to understand why  $S_N2$  rxns occur favorably at benzylic Cs.





Transition state orbital overlaps with  $\pi$  system of Aromatic ring

Most important



more electronegative than  $Cl^-$  is more reactive at this more electropositive  $sp^3$  center than due to inductive  $sp^2$  center.

vs

no dipole

no dipole