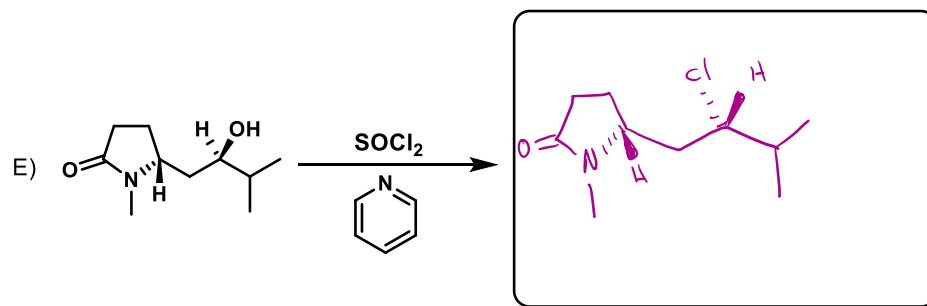
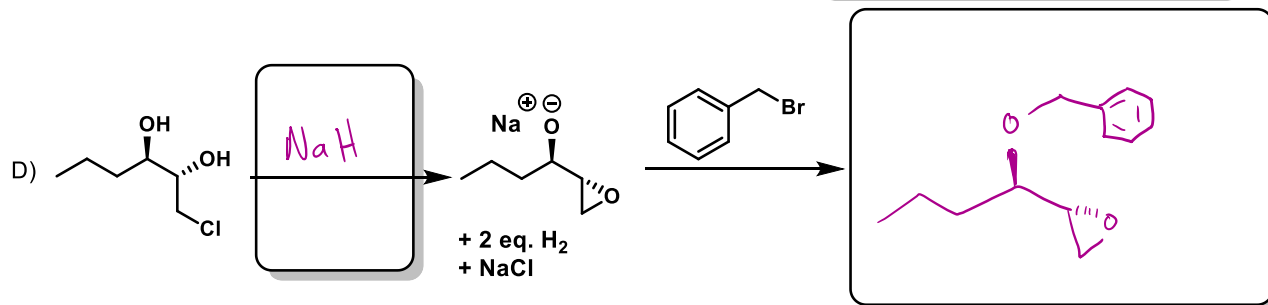
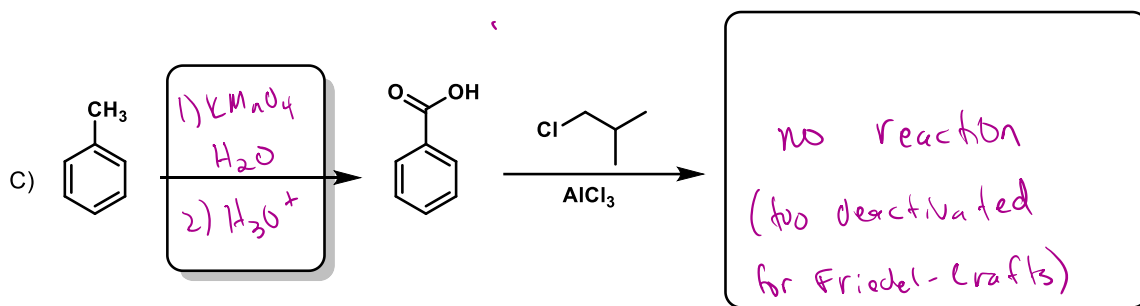
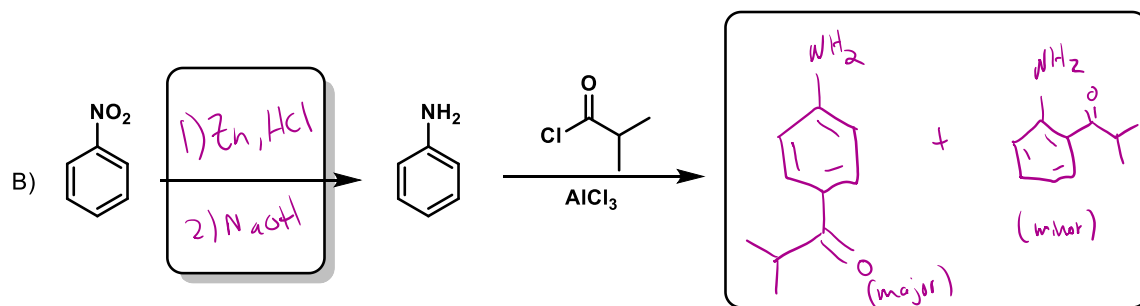
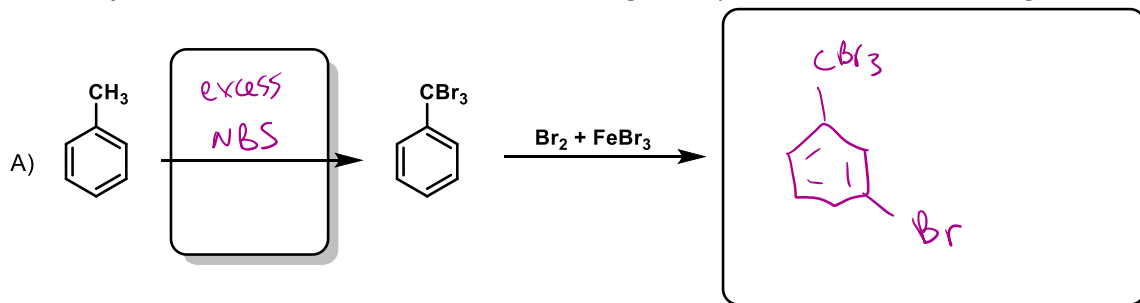
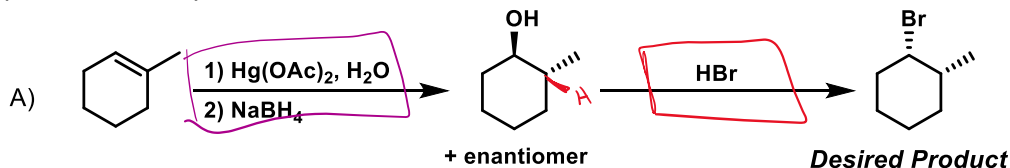


1. **Quick Synthesis.** In the boxes, fill in the correct reagent or product for the reactions given.



2. **Flawed Synthesis.** Below you will find three syntheses that will not ultimately lead to the **Desired Product**. In the first box, describe the flaws inherent in the synthetic route presented. In the second box, provide a new synthetic route that will lead to the **Desired Product**.



Does Markovnikov
hydration.
Need anti-Markovnikov

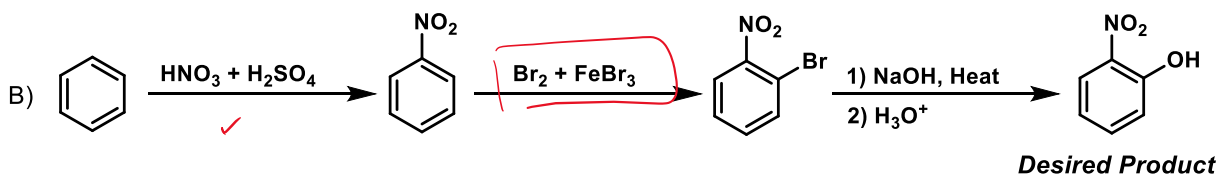
Synthetic Flaws

2° alcohol + HBr
often gives C^+ rearrangement
to 3° C^+ , bc $-OH_2^+$ is such
a good leaving group

New Route

1) $BH_3 \cdot THF$
2) $NaOH, H_2O_2$

PBr_3 →



Synthetic Flaws

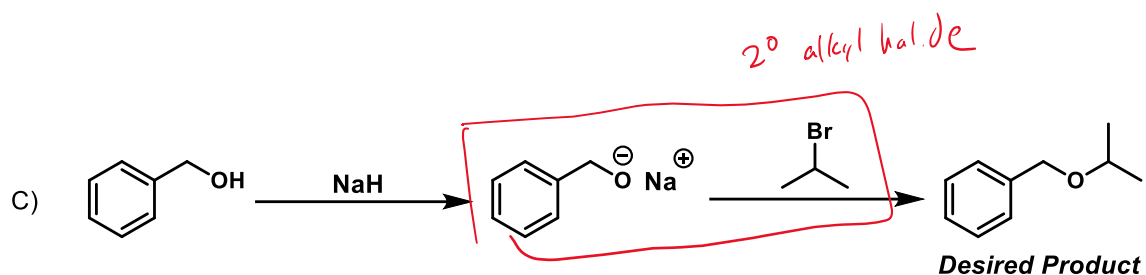
would add
Br to
meta position

New Route

swap steps 1 & 2 so NO_2 adds
to ortho position!

(+ add blocking step

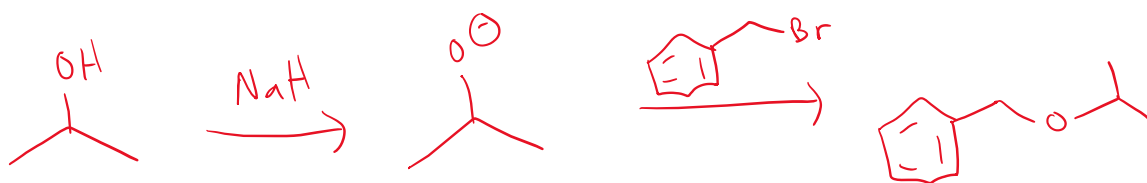
to improve
yield!)



Synthetic Flaws

*E2 will be favored
bc 2° alkyl halide
(and bulky nucleophile!)*

New Route



3. **Oxidation State.** In the large boxes, fill in the reagents needed to achieve this transformation. In the small boxes, record the oxidation state of the atom the arrow indicates.

