

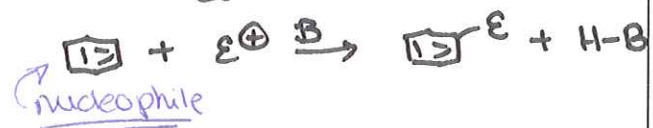
Week 4 - End of the Week. (Not on Midterm 1)

① Other Methods to substitute Aromatic Rings:

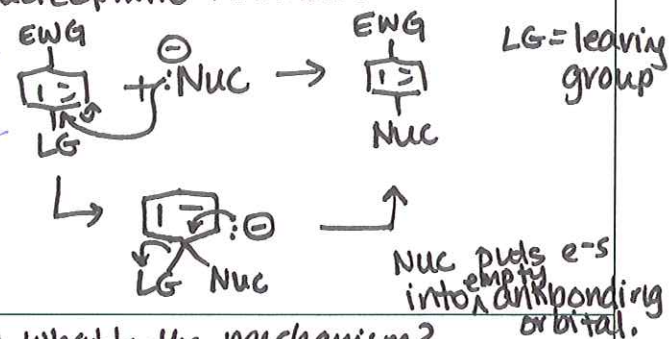
- 1) Nucleophilic Aromatic Substitution
- 2) Transition Metal Catalysis (Heck Rxn, 2010 Nobel Prize)
* For Fun.

② Nucleophilic Aromatic Substitution

Recall: Electrophilic Aromatic Substitution

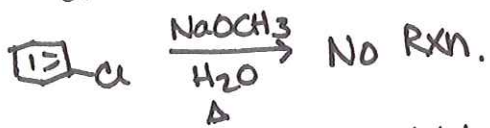


Nucleophilic Aromatic Substitution:

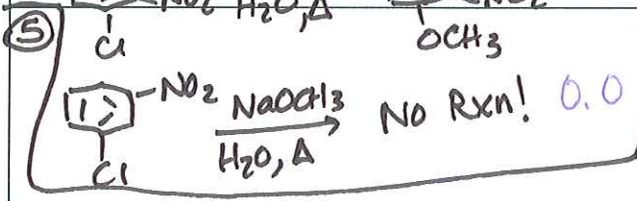
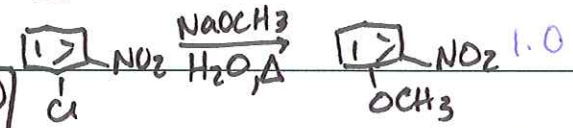
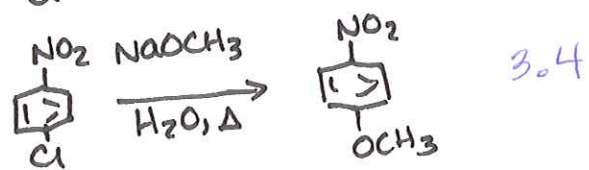
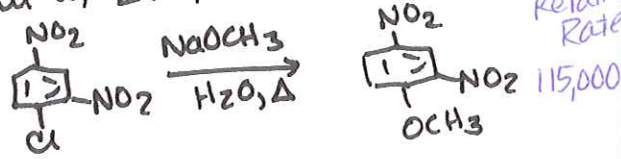


Electrophile
Wow!!

③ Does NOT work w/ BENZENE-CHLORIDE:



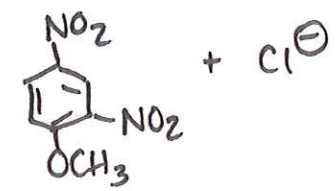
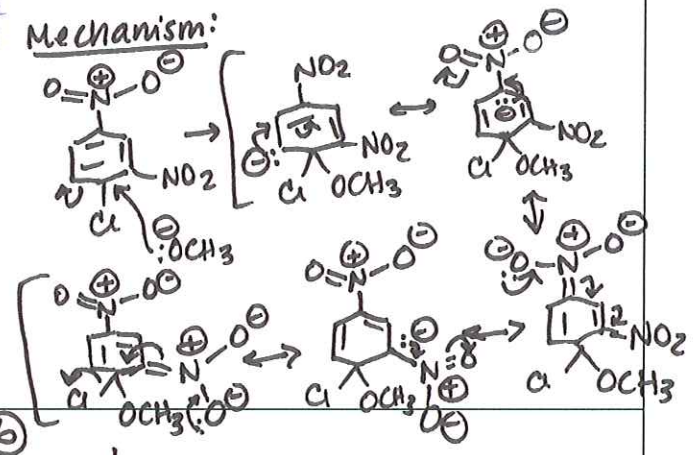
But w/ EWG's in the right positions...
Relative Rates



④ What's the mechanism?
Why do EWG's help?

- * NOT S_N2
- * NOT S_N1

Mechanism:



Other Nucleophilic Aromatic Substitution:

