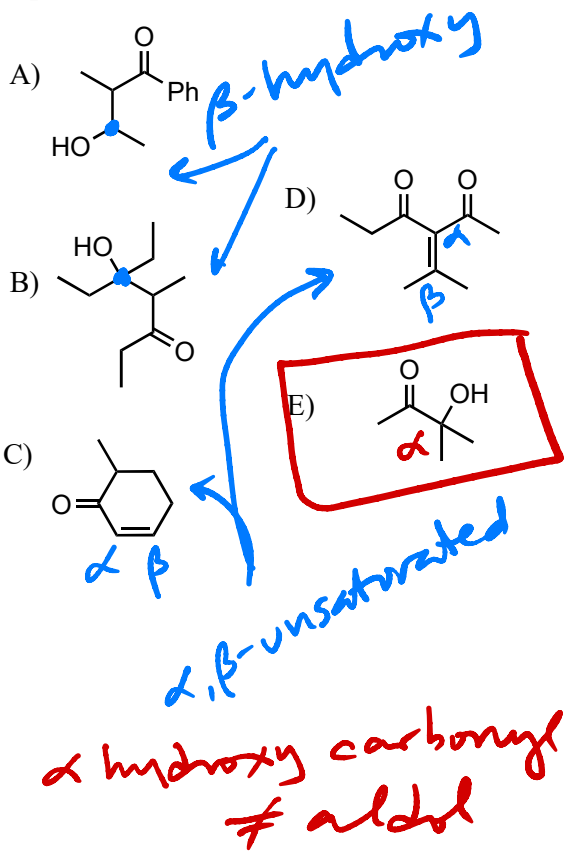
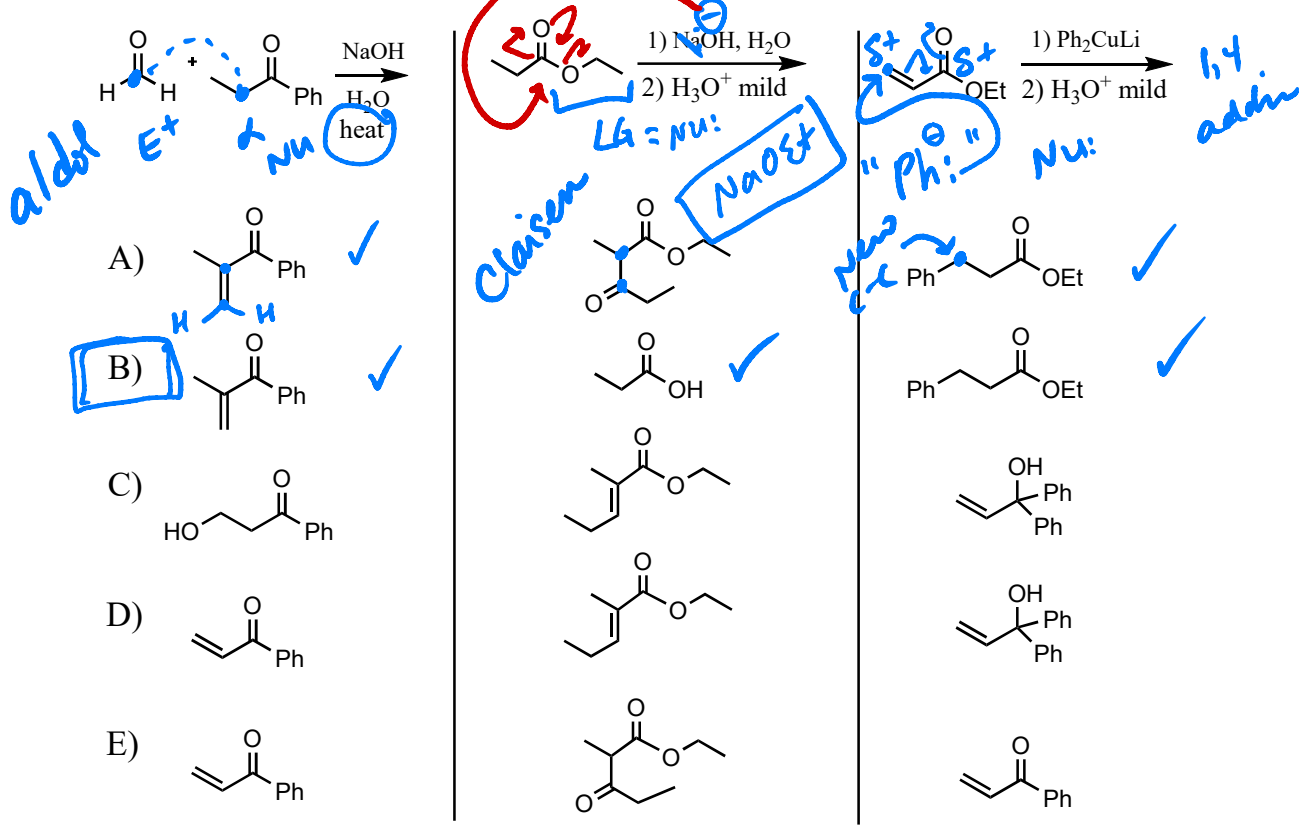
Organic Synthesis CHM 4220, Dr. Laurie Starkey, Cal Poly Pomona, 2-Group Review Problems (Sections 4.1, 4.2)

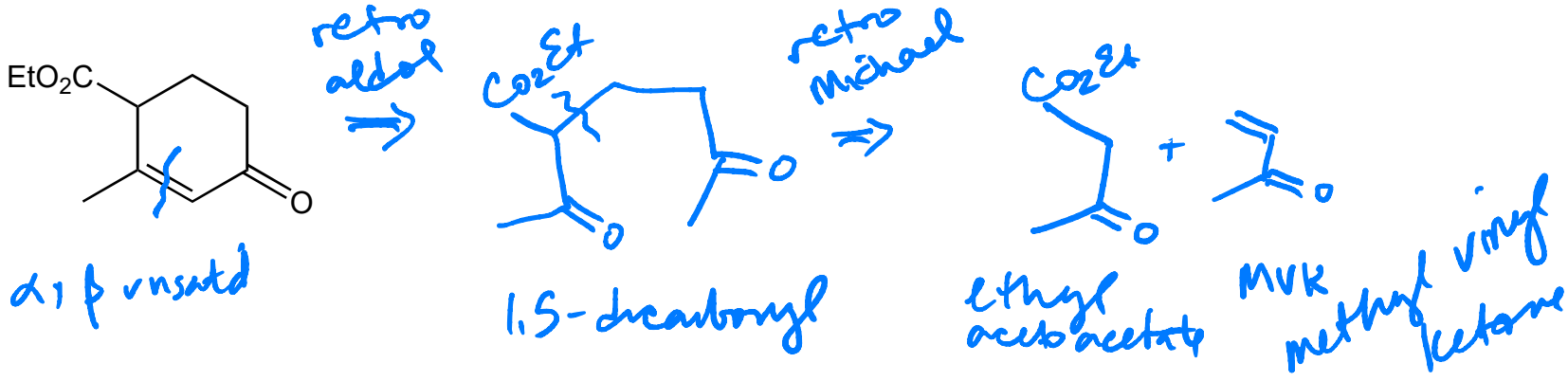
Which of the following could NOT be a product of an aldol reaction?



Predict the major products for the following reactions.

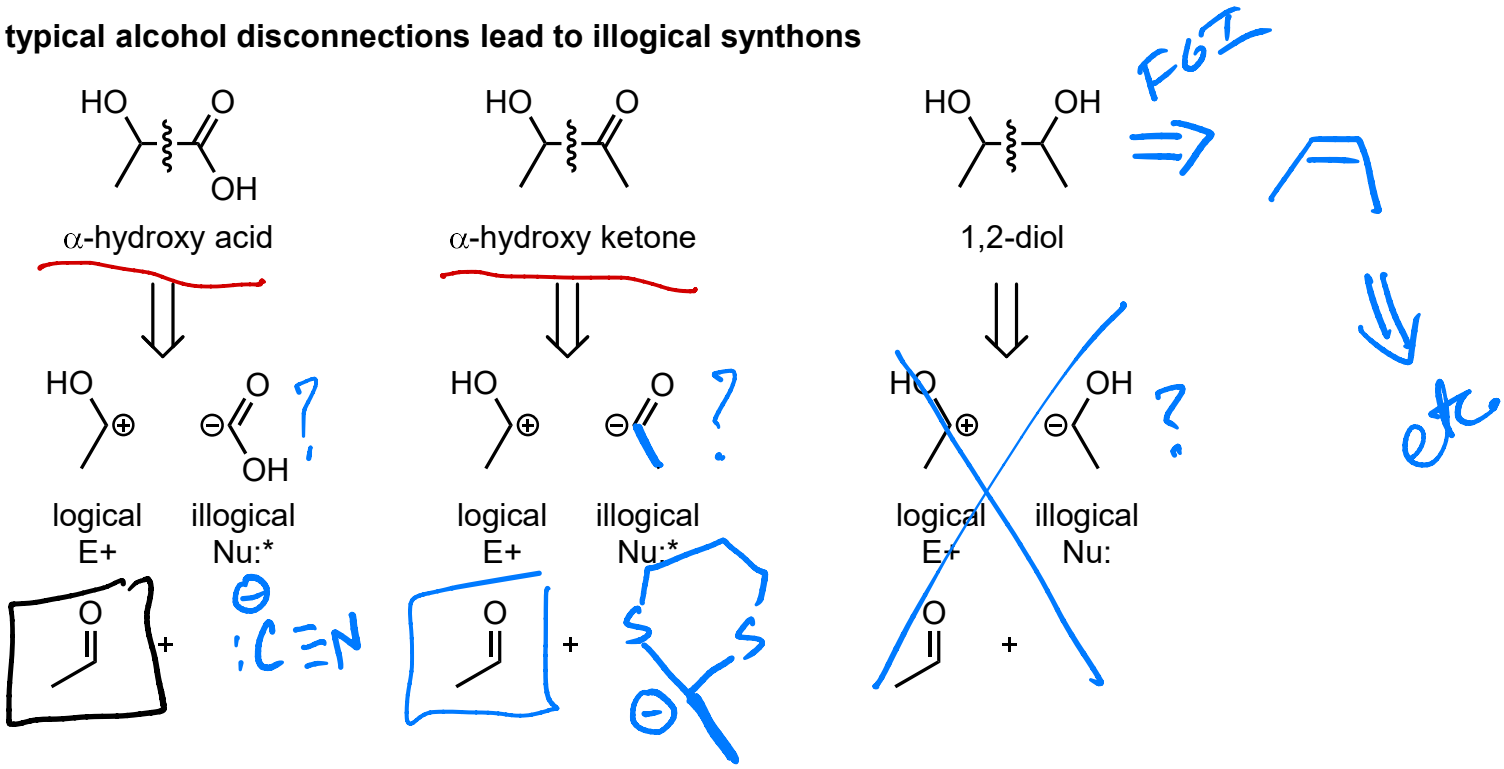


Provide a retrosynthesis for the given target molecule (hint: Robinson). Starting materials have carbon chain maximum length of 4 carbon atoms.

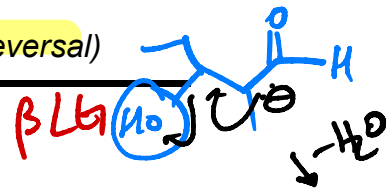


4.3 "Illogical" 2-FG TMs: 1,2-Dioxygenated Patterns

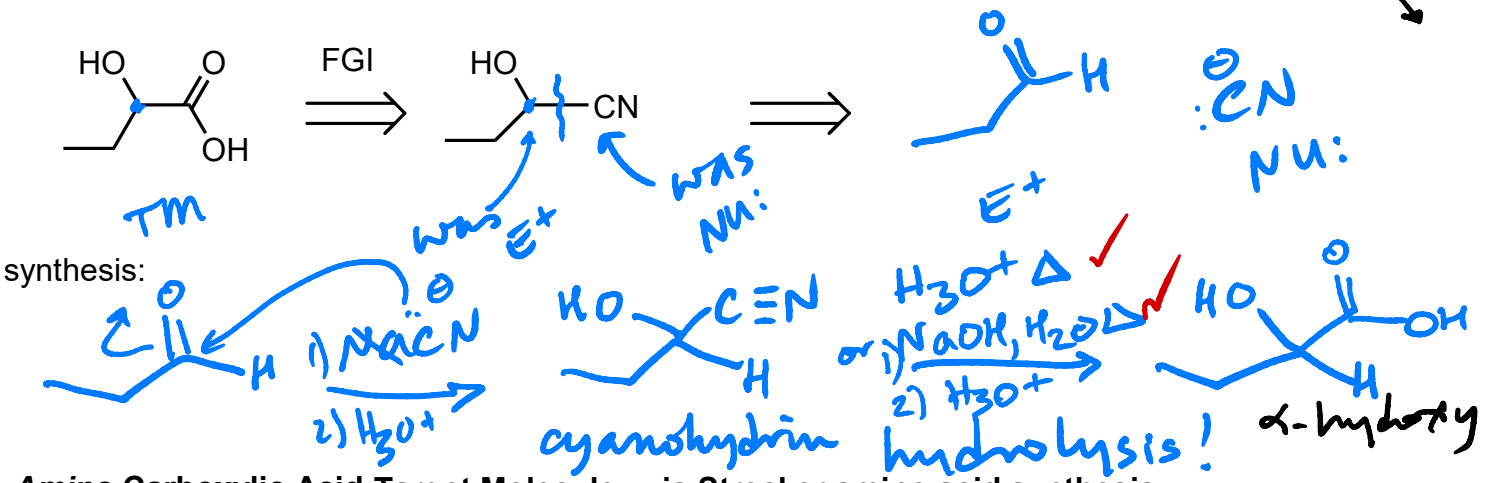
typical alcohol disconnections lead to illogical synthons



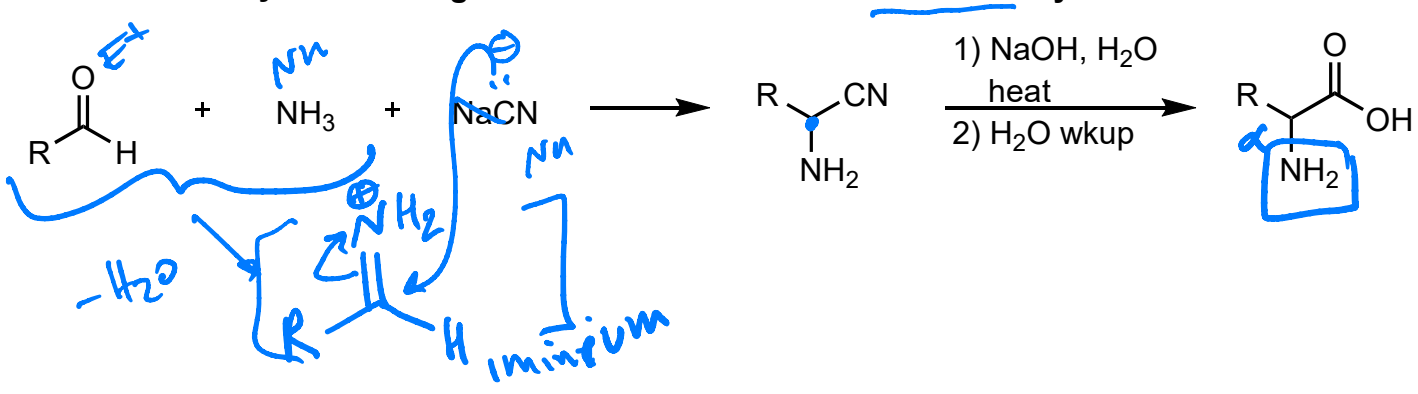
use of synthetic equivalents gives logical disconnections
making a carbonyl carbon a nucleophile is called **Umpolung (polarity reversal)*



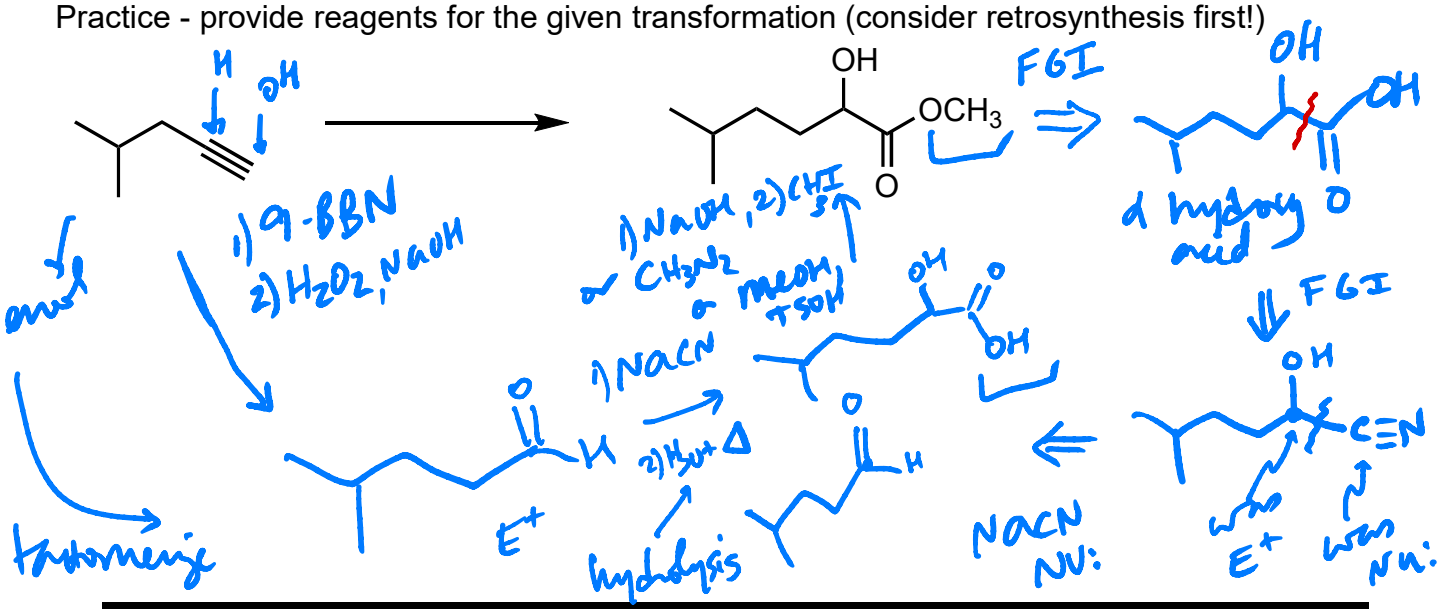
α-Hydroxy Carboxylic Acid Target Molecule



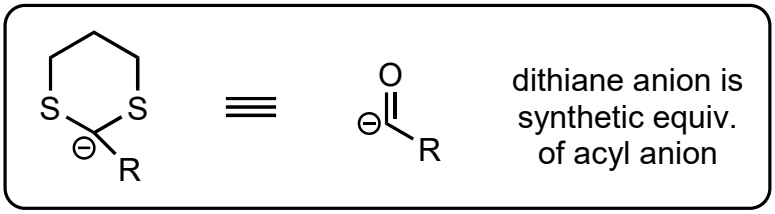
α-*Amino* Carboxylic Acid Target Molecule - via Strecker amino acid synthesis



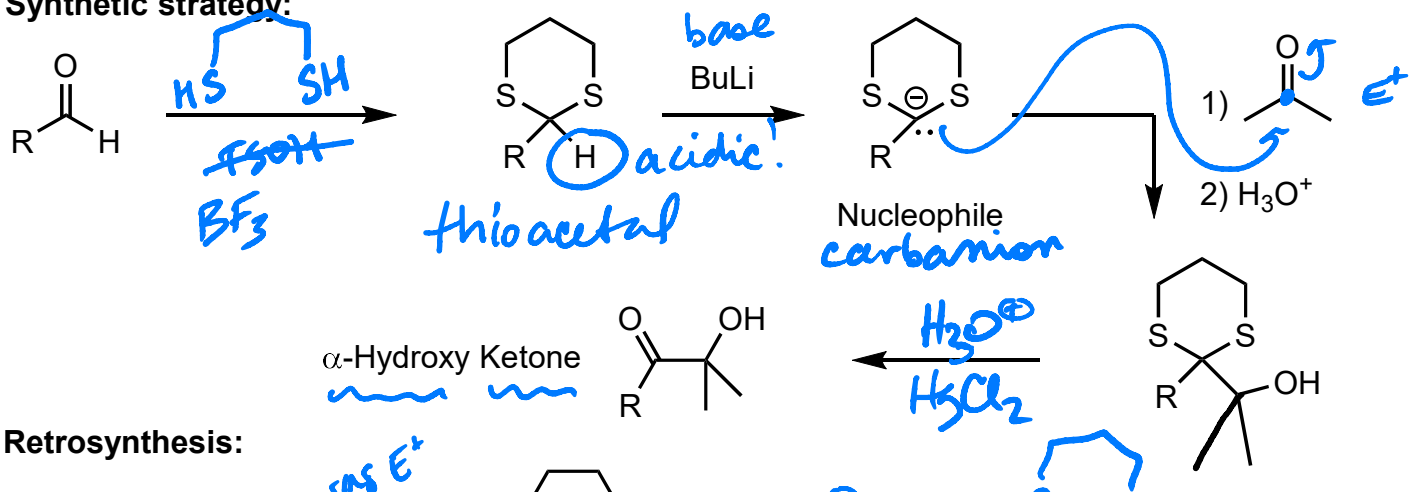
Practice - provide reagents for the given transformation (consider retrosynthesis first!)



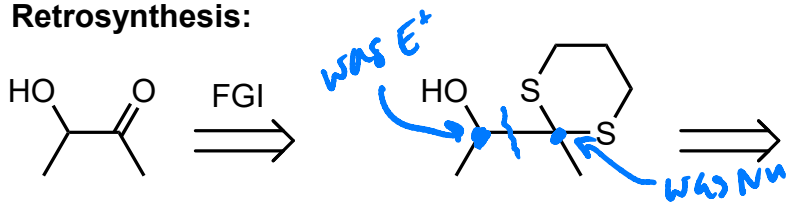
α-Hydroxy Ketone Target Molecule



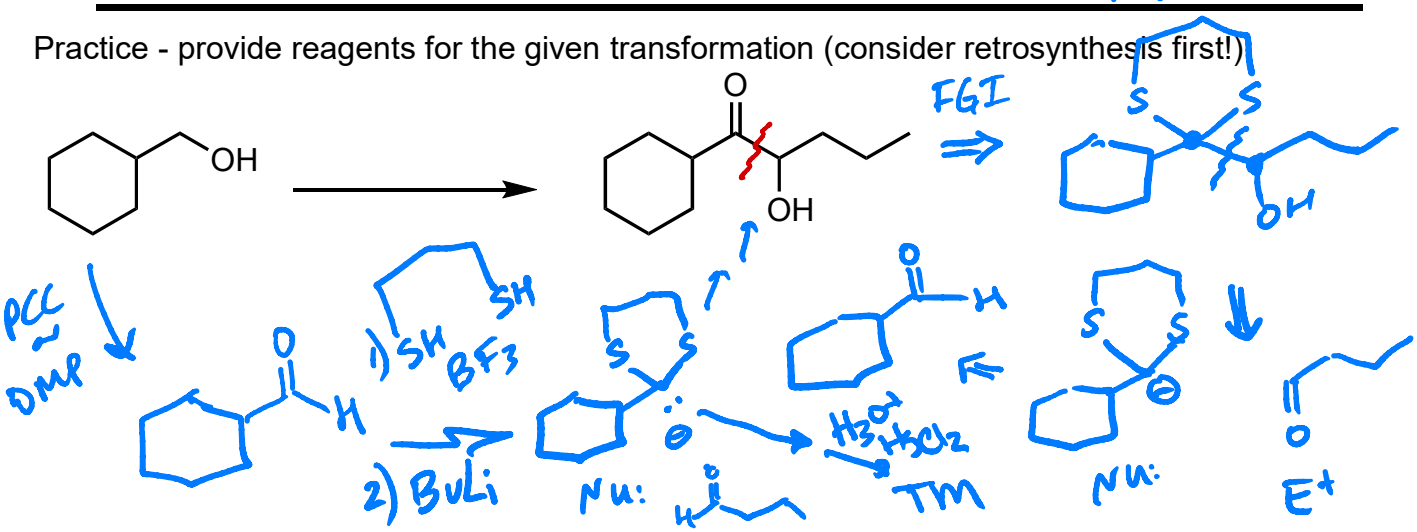
Synthetic strategy:



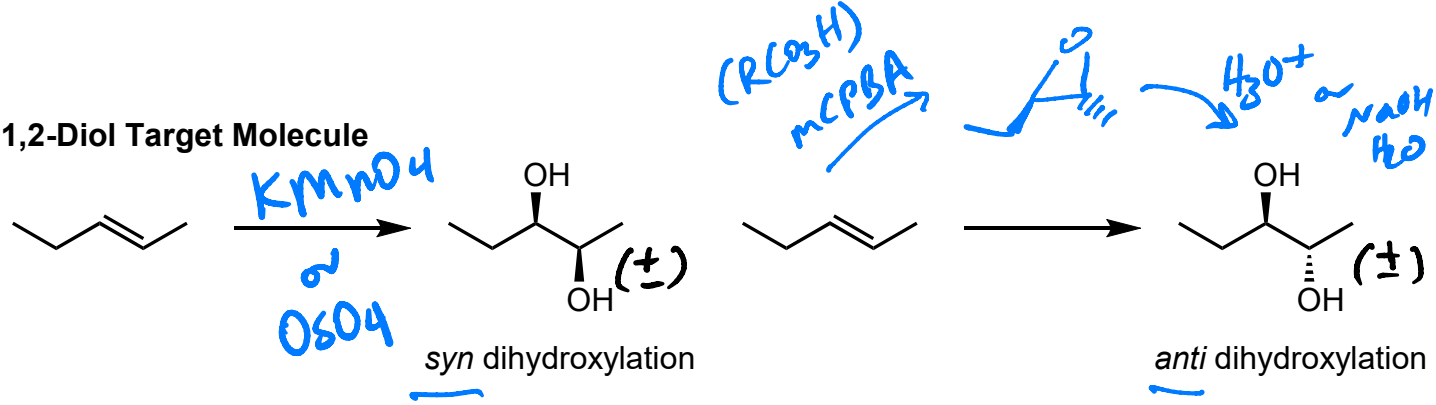
Retrosynthesis:



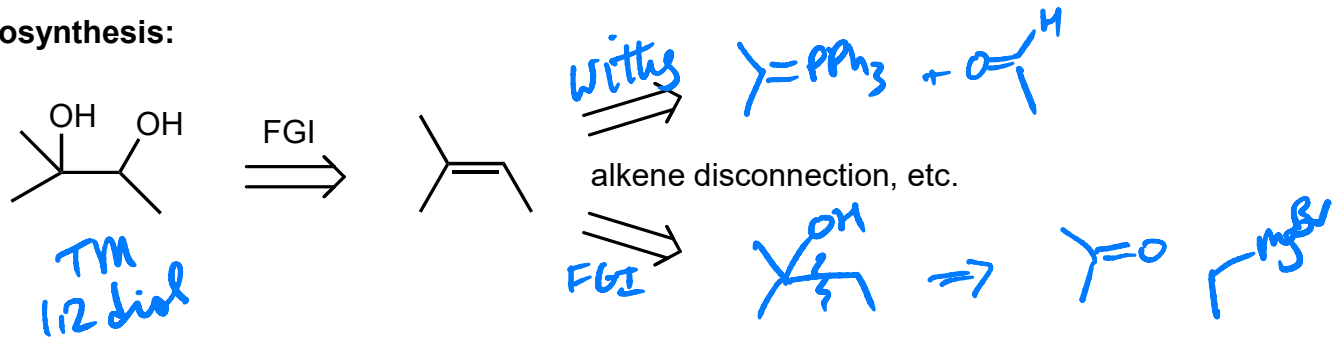
Practice - provide reagents for the given transformation (consider retrosynthesis first!)



1,2-Diol Target Molecule

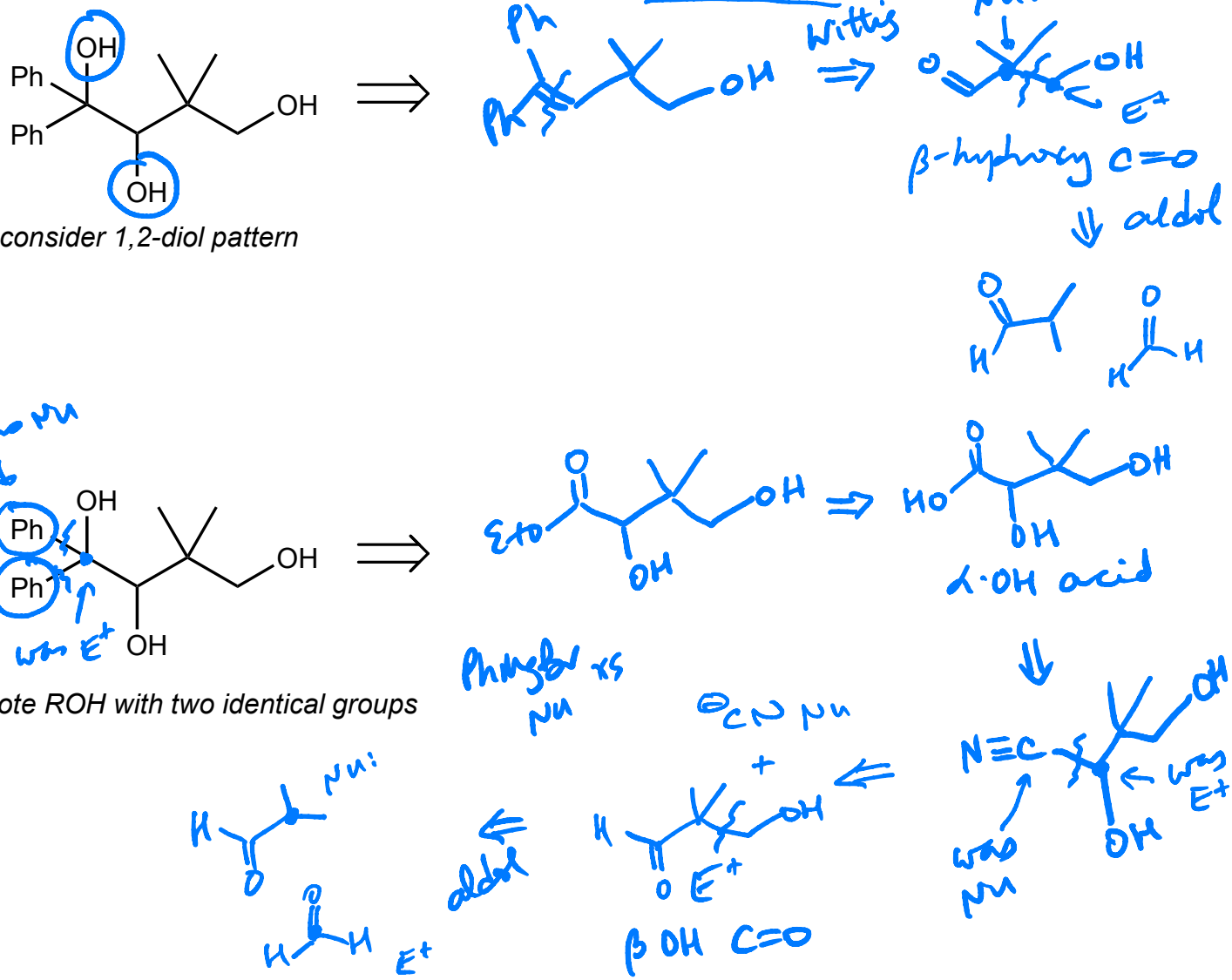


Retrosynthesis:



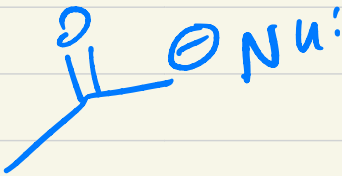
*section 4.3.1

Practice: provide a retrosynthesis. Work back to only **monofunctional** starting materials.

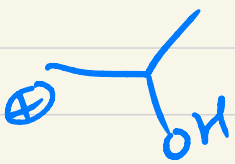


Ch 4

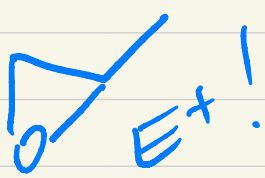
4.3.2 1,4 dioxygenated



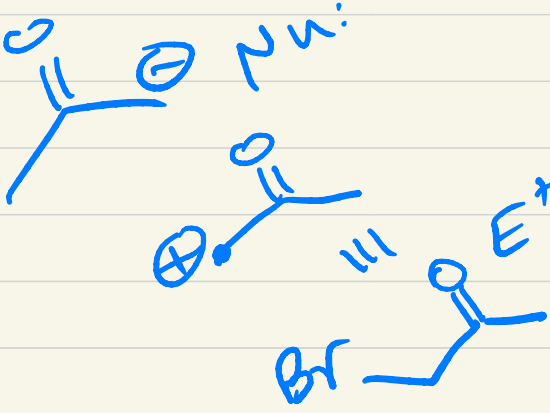
β-OH



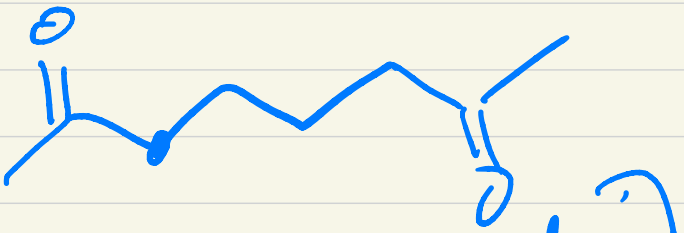
III



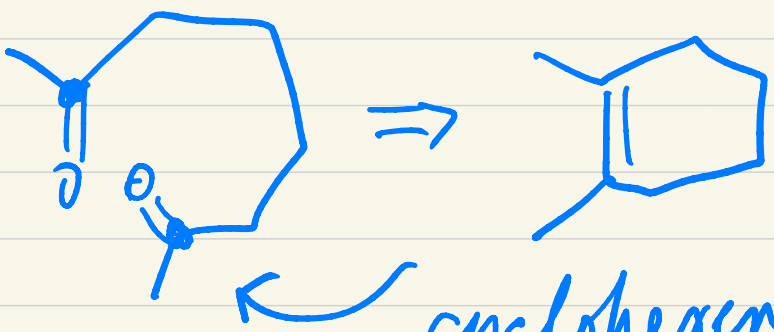
1,4 Icarbonyl



4.3.3



1,6 dicarbonyl



cyclohexene

Diels-Alder rxns