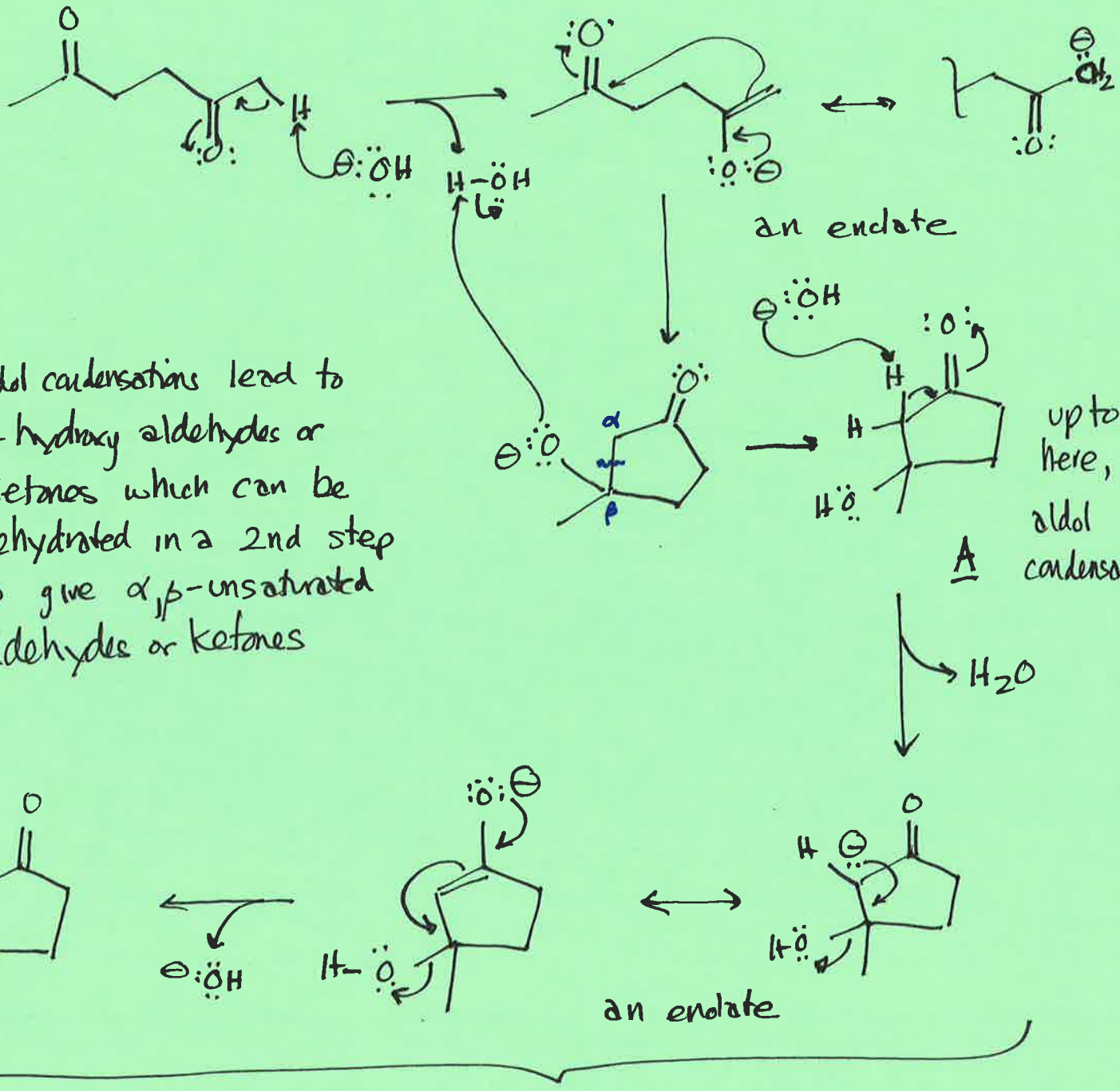
SQ 6

#1 The SM is a diketone + base is a reactant. This suggests aldol condensation.

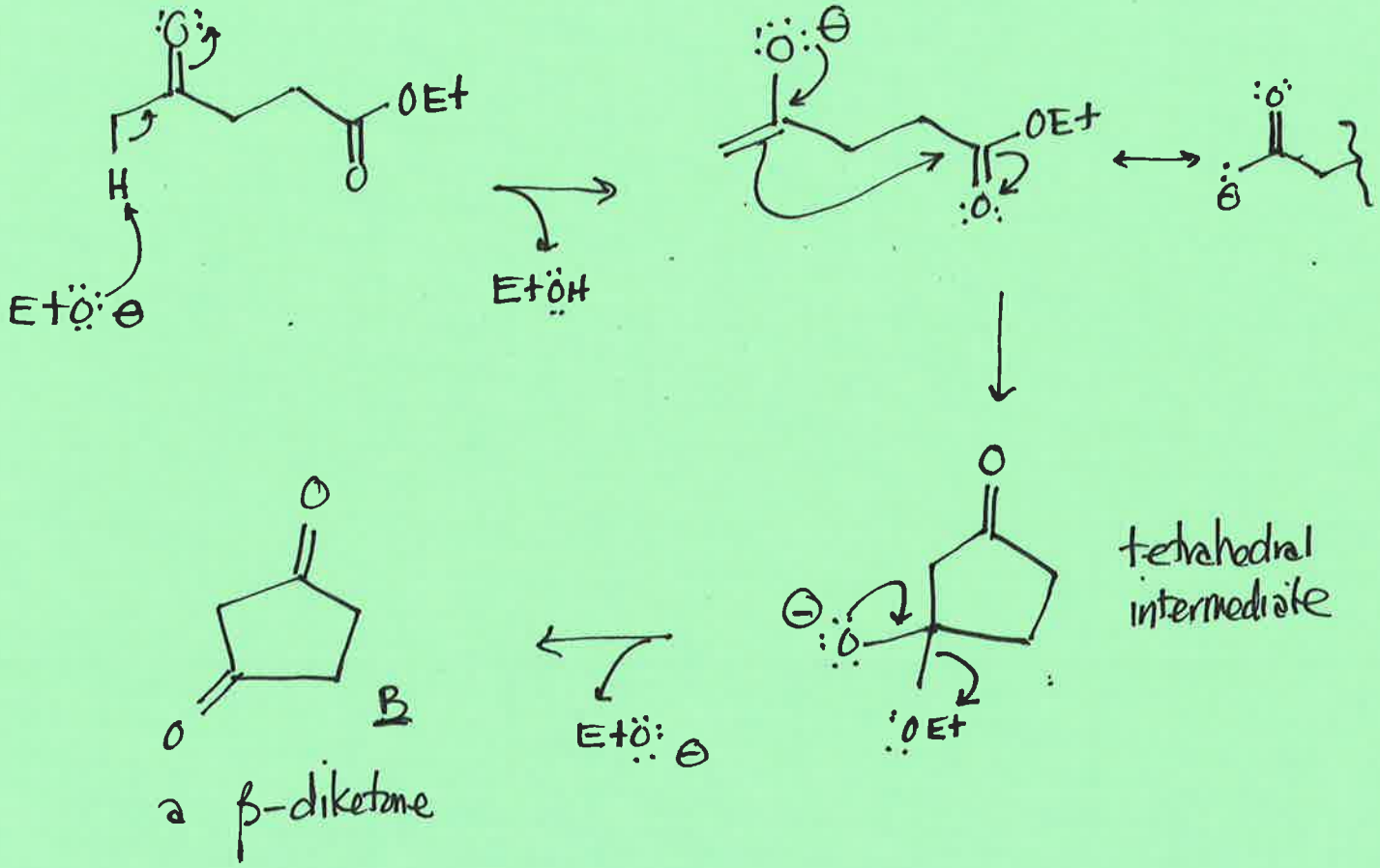


E1cb

an elimination

SQ6

#2



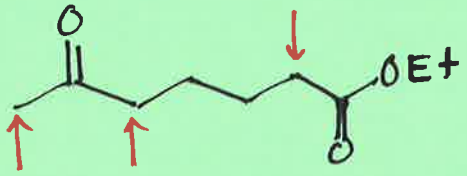
this is a mixture of an aldol & Claisen condensation

Now that we are getting more comfortable w/ mechanisms (?), let's work on details:

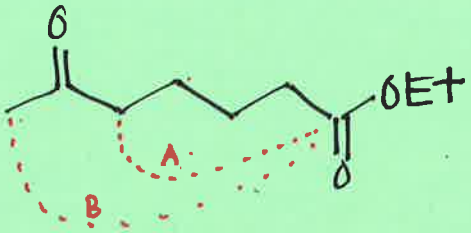
- show lone pairs on all atoms that are reacting
- show at least 1 typical resonance form when res forms are relevant (i.e. explain reactivity)
- be sure all formal charges are clearly shown
- be sure that each step is balanced – show the little pieces the come off

SQ 6

#3 very much like #2, but ....

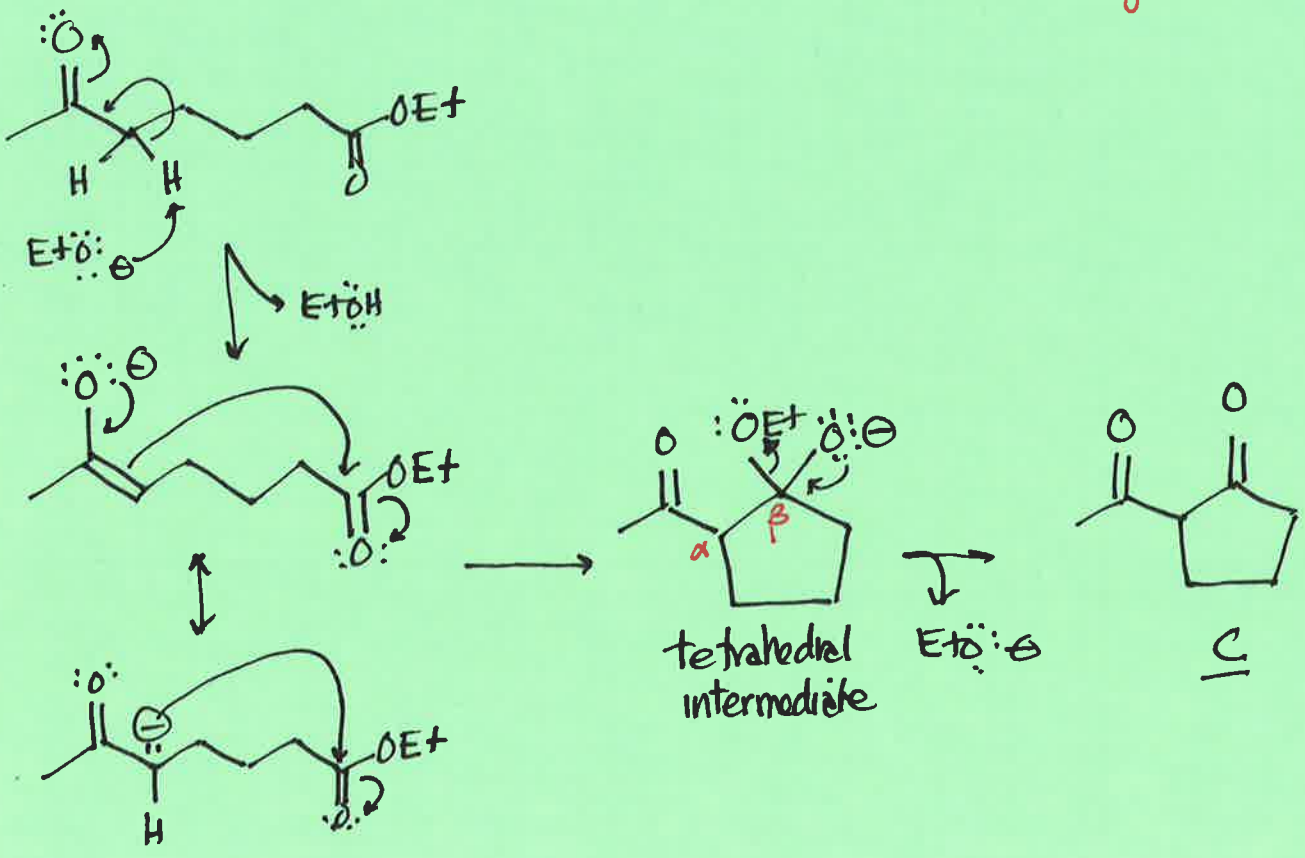


enolates can be made at any of the red arrows. however, the ketone is more acidic & thus favored. but that still leaves 2 options



option A gives a 5-membered ring.
option B gives a 7- membered ring.

Generally, 5 or 6 membered rings form easily. 3 or 4 membered rings are disfavored due to ring strain. 7+ rings are disfavored due to entropy.

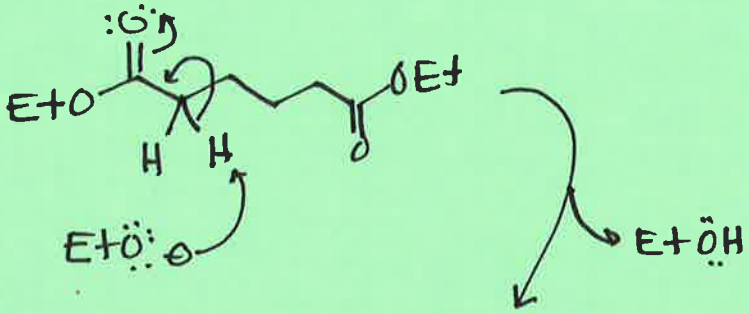


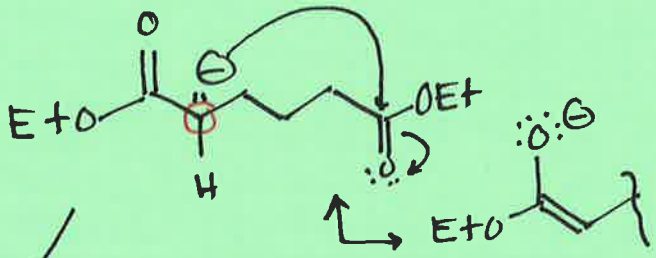
SQ 6

#4

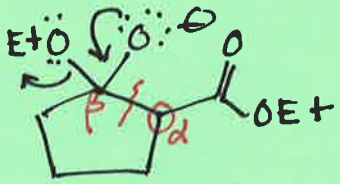
SM is a diester & 1st product is β-ketoester so this first step is a Claisen condensation

5-membered ring (but we also know that from the product which is given)

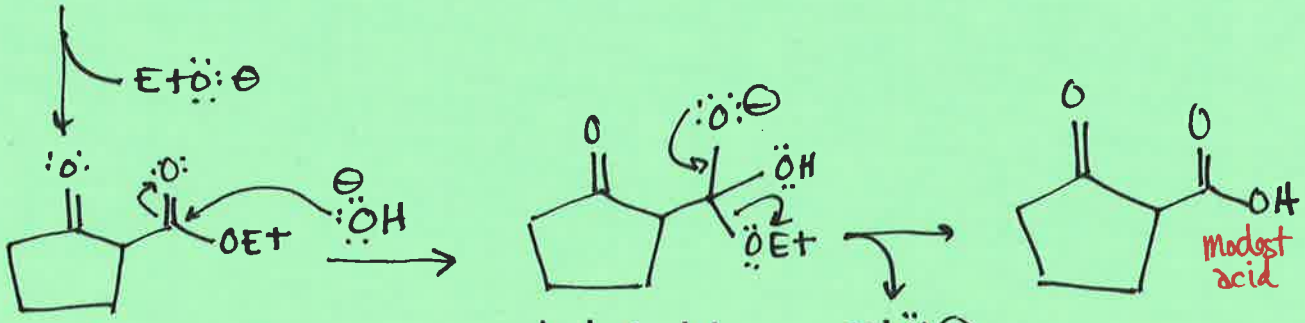




an enolate



tetrahedral intermediate

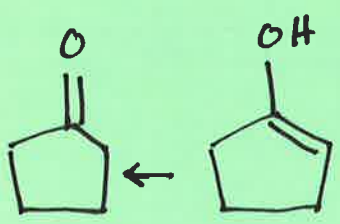


decarboxylation occurs due to unique 6-membered ring that puts things in proximity

tetrahedral intermediate

modest acid

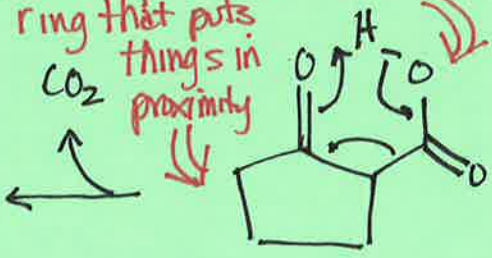
strong base



keto form

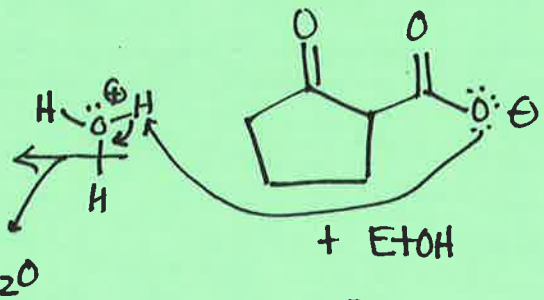
enol form

tautomerisation



E

whoa! Strap in! buckle up!



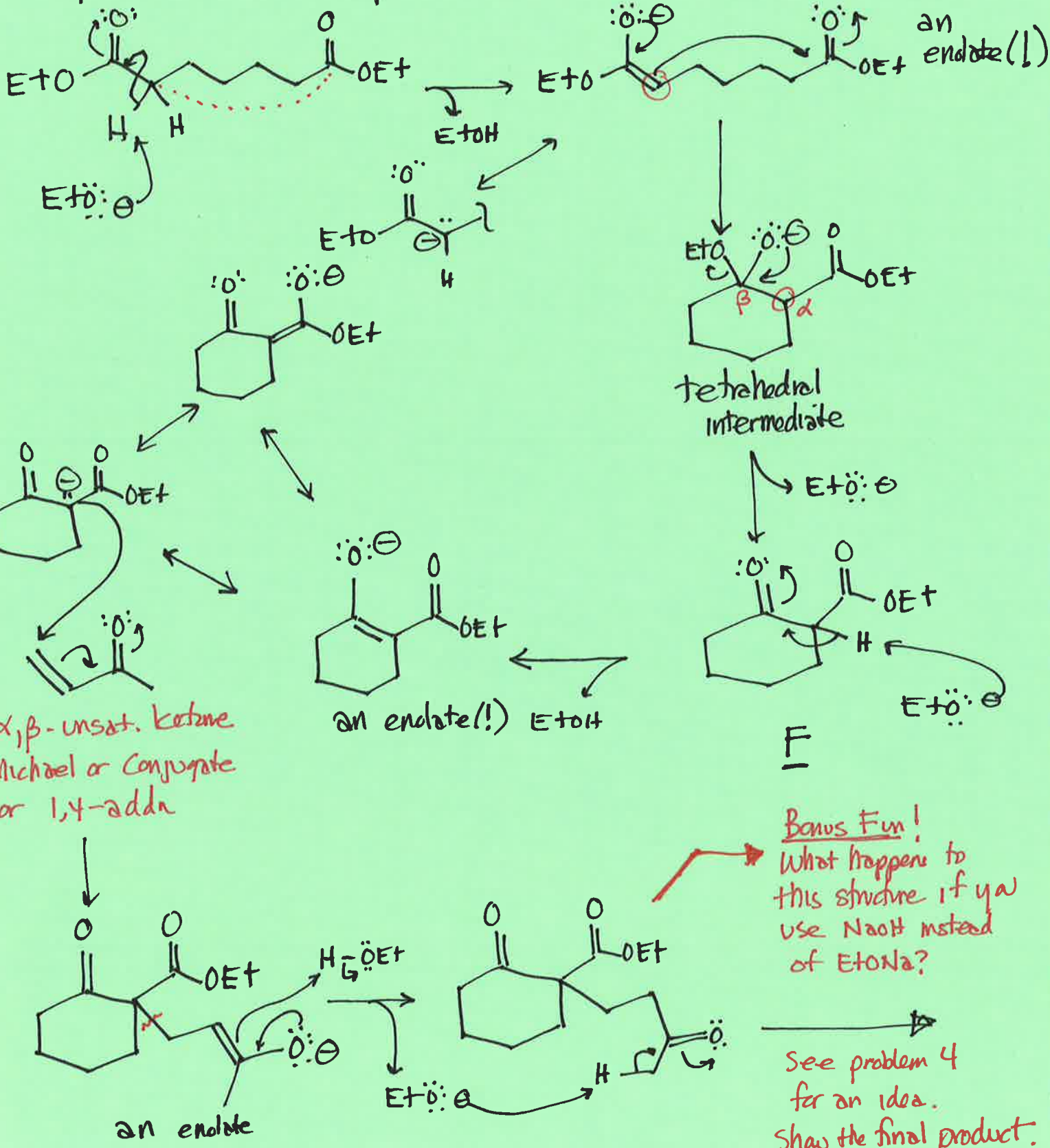
+ EtOH

D

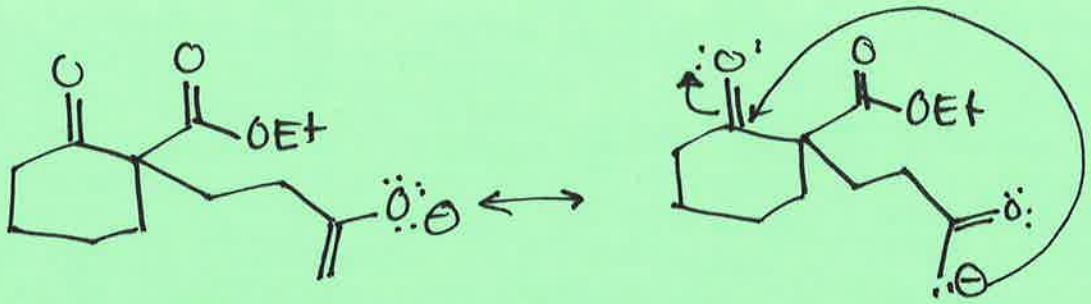
SQ6

#5

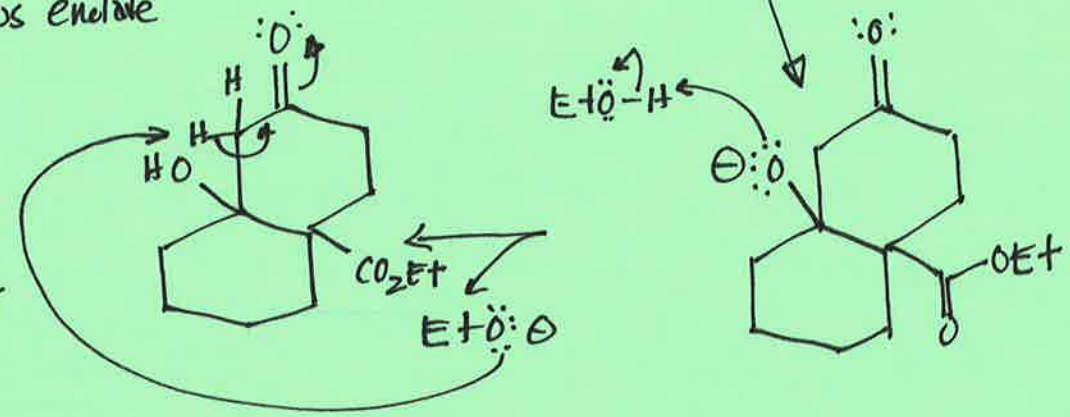
1st part is like the 1st part of 4 but w/ a larger ring.

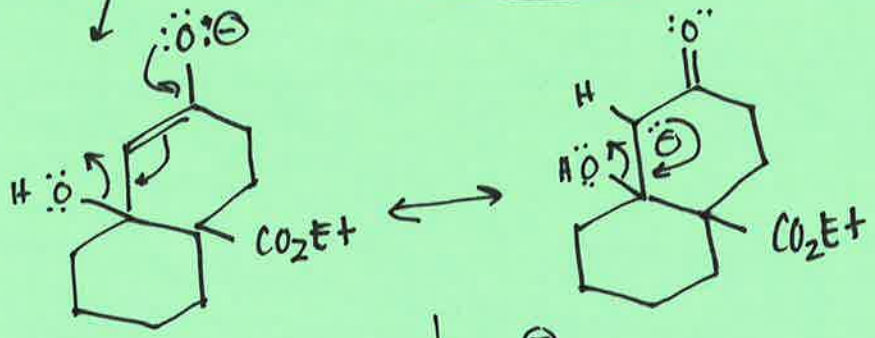


#5 cont

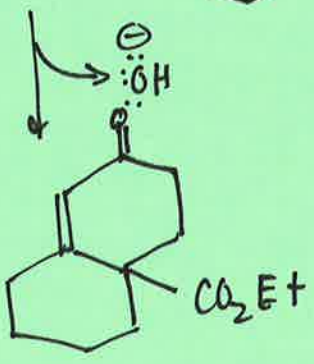


an enolate, different from the previous enolate





E1cb



G

IR shows an ester (1740 cm^{-1}) & a conjugated ketone (1700 cm^{-1})