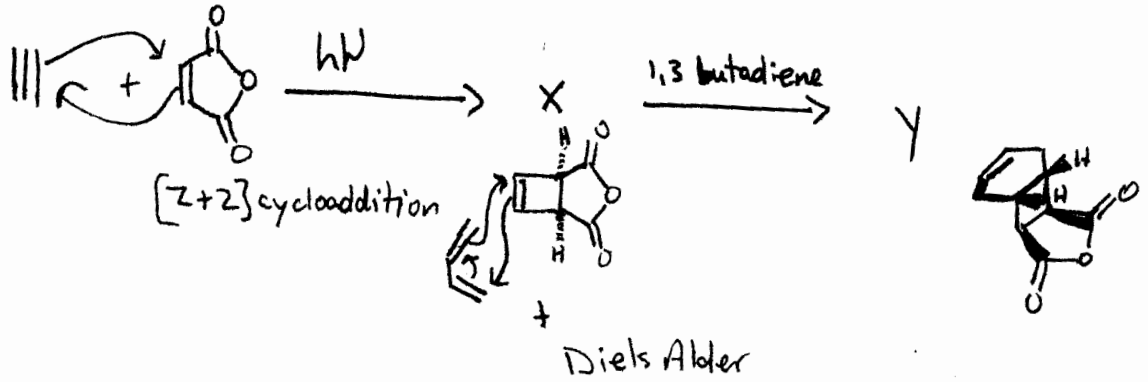
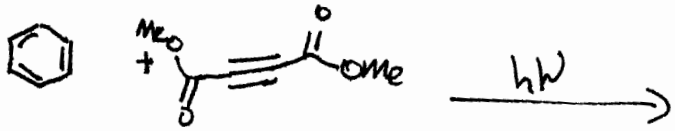
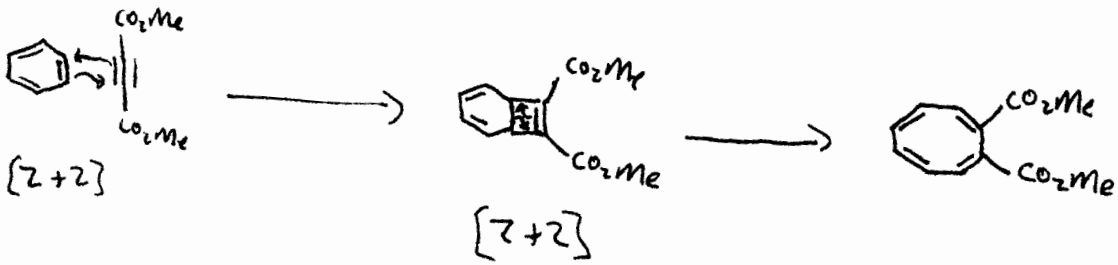
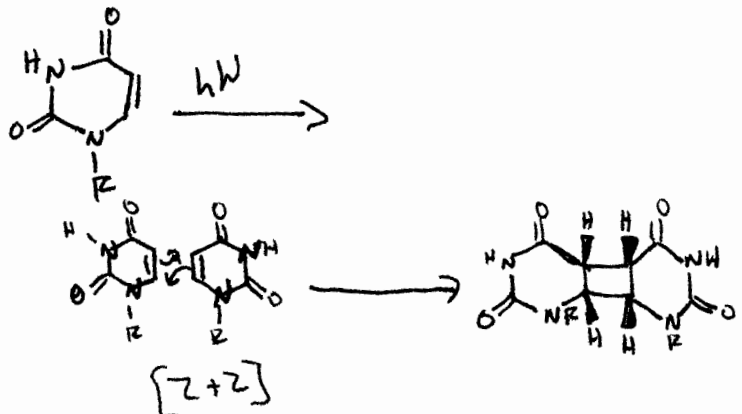
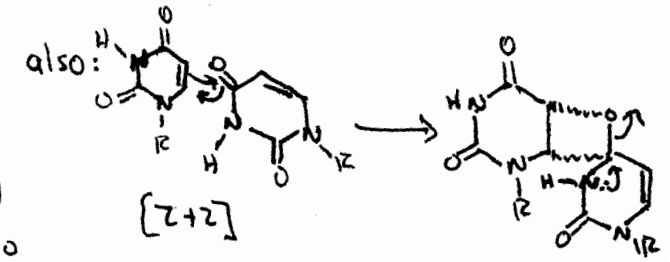
Give the product for the following reactions

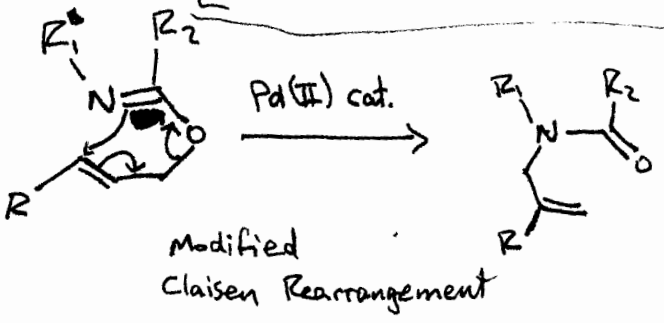


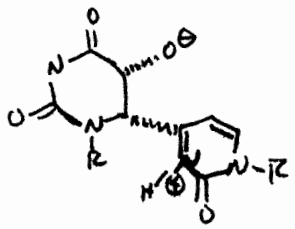


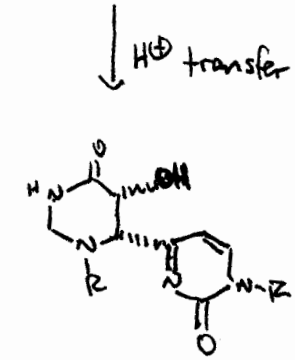






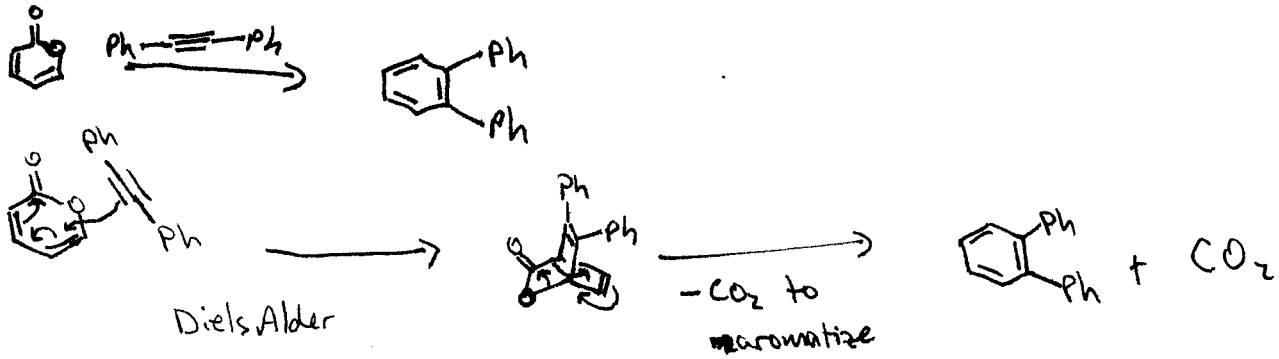


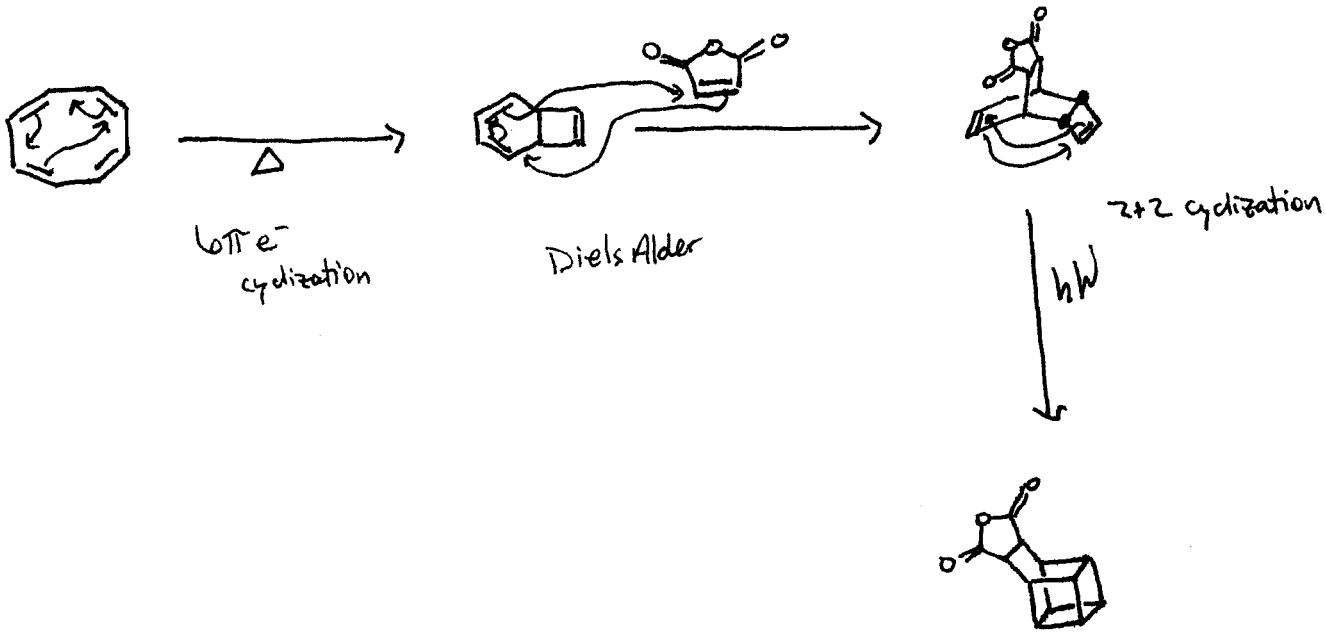




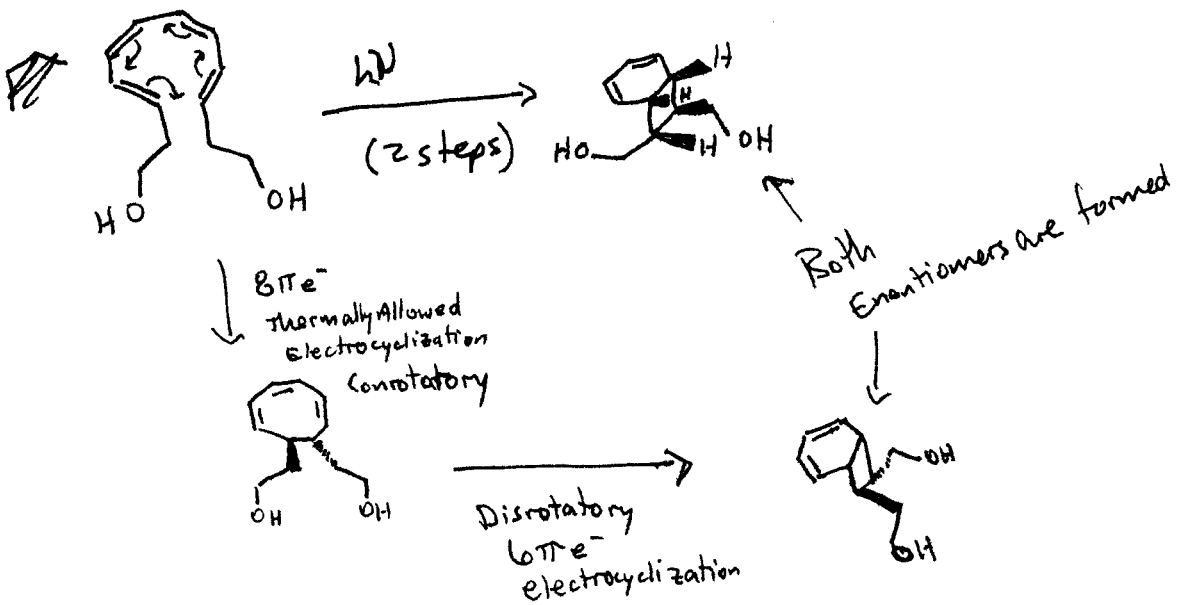
- The Pd catalyst serves to withdraw e⁻ density from N and speed the ~~rear~~ rearrangement.
- Notice the vinyl allyl ether structure

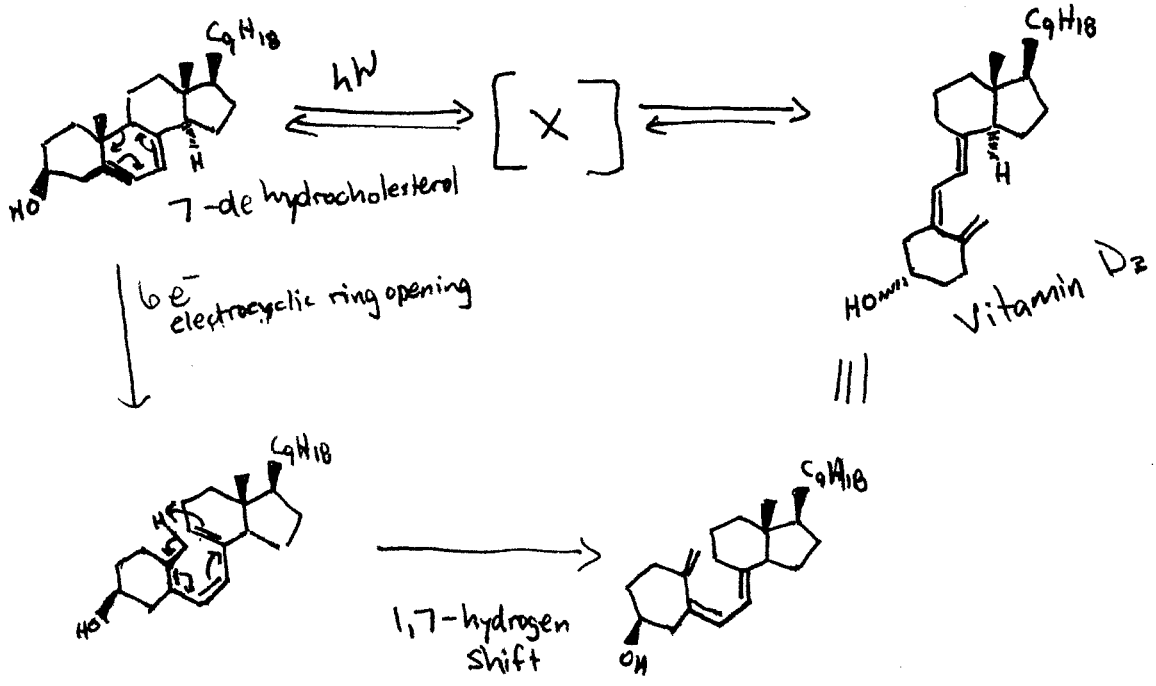
Provide a Mechanism for the following Transformations





Mechanisms Continued

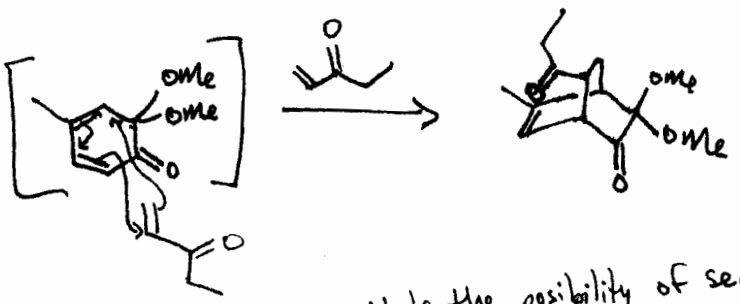




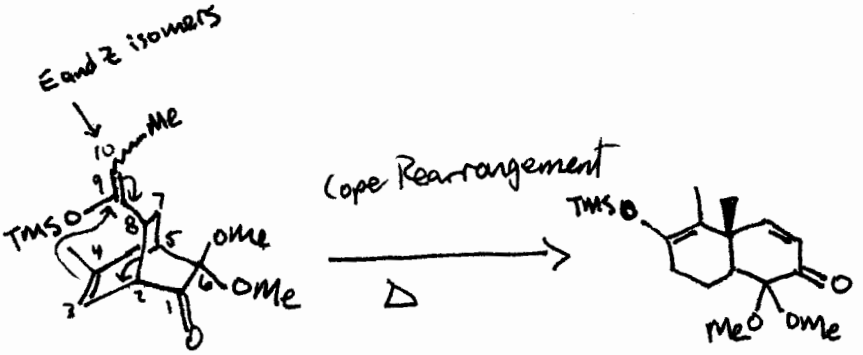
Although D_3 is obtained in the diet through dairy products, and animal livers, it is also produced in human skin when 7-dehydroxy cholesterol is exposed to UV light.

The following two reactions come from the synthesis of (±)-Eremopetasidione, a compound used in chinese medicine for poisonous snake bites, tonsilitis and contusions.

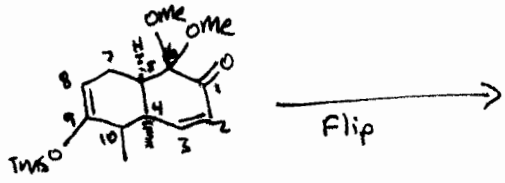
Give a mechanism for the following steps.

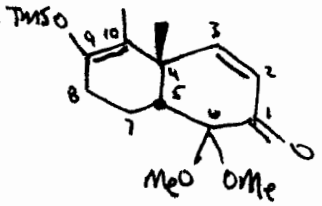


Diels Alder – Note the posibility of secondary overlap (Text p659) to stabilize the transition state



Numbering Carbons Helps!





Although the 8-9 double bond is assumed to form first, the 9-10 double bond is thermally more stable (we're heating) and is isolated.

Hsu, D.S.; Hsu, P.Y.; Liao, C.C.; *Org. Lett.* **2001**, 3, 263-5.