CONCEPT: CUMULATIVE ELECTROCYCLIC REACTIONS

Step 1: Determine ROTATION (conrotatory vs. disrotatory)

a. Obtain HOMO through combination of drawing molecular orbitals + activation type —*OR*—

b. Use *Electrocyclic Rotation Summary Chart:*

π–bonds	Activator	Rotation
Even	Thermal	Conrotatory
Odd	Photochemical	Conrotatory
Even	Photochemical	Disrotatory
Odd	Thermal	Disrotatory

"Etc."

Step 2: Determine STEREOCHEMISTRY

a. Obtain final structure by drawing 3D-representation + ROTATION —*OR*—

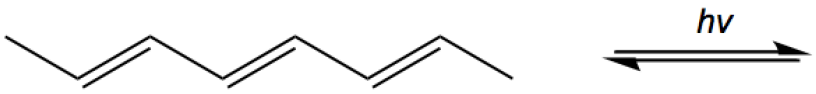
b. Use *Electrocyclic Stereochemistry Summary Chart*

π–bonds ⇌	Rotation ⇌	Ring
Same	Disrotatory	*CIS*
Different	Conrotatory	*CIS*
Same	Conrotatory	*TRANS*
Different	Disrotatory	*TRANS*

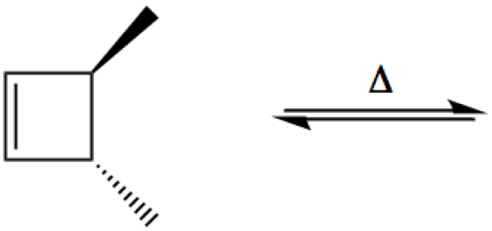
"Same? DIS is CIS"

PRACTICE: Use the summary charts to predict the product of the following reactions. If there is more than one isomer possible, draw them.

a.



b.



PRACTICE: Electrocyclic reactions are not limited to neutral conjugated polyenes, but are also applicable to ionic conjugated systems. Propose a mechanism and product for the following reaction.