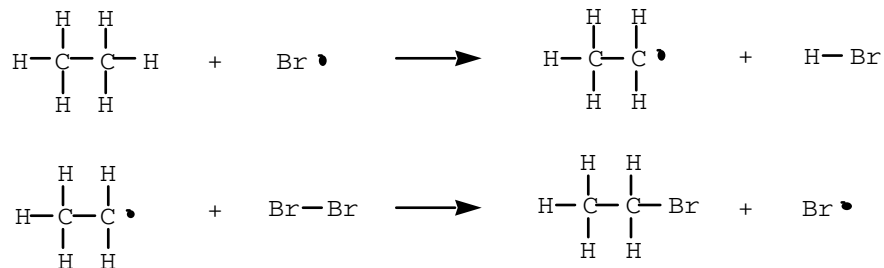
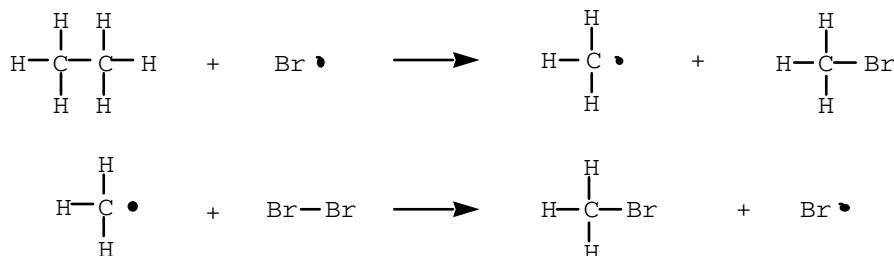


1 Consider the two radical mechanisms shown below:

Mechanism # 1



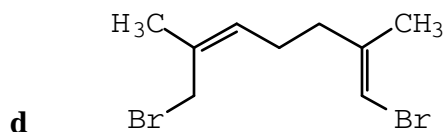
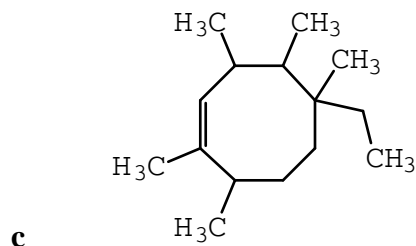
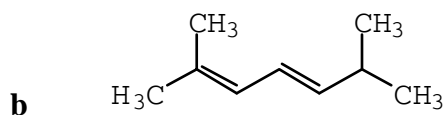
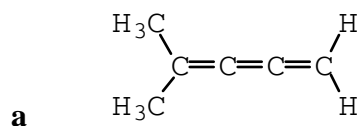
Mechanism # 2



- (a) Write the overall balanced reaction that results when mechanism # 1 is followed.
- (b) Write the overall balanced reaction that results when mechanism # 2 is followed.
- (c) Using the data in the table, calculate ΔH° of each step of both mechanisms.
- (d) Indicate which mechanism is the more likely.
- (e) Explain the reasoning on which you base your selection in (1d).

Bond	DH° [kcal/mol]
Br-Br	53
Br-CH ₂ CH ₃	71
Br-CH ₃	71
H-Br	88
H ₃ C-CH ₃	90
H-CH ₂ CH ₃	101

2 Name these compounds; use stereochemical descriptors where appropriate.



3 Rank these alkenes in order of stability (1 = most stable).

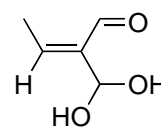
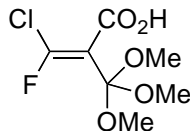
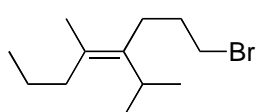
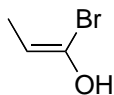
3-methyl-1-heptene

3-ethyl-3-hexene

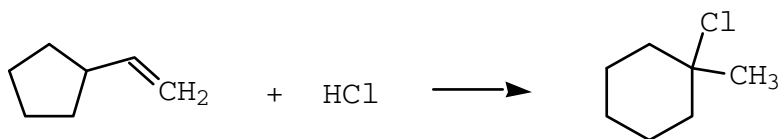
2,3-dimethyl-2-hexene

trans-2,5-dimethyl-3-hexene

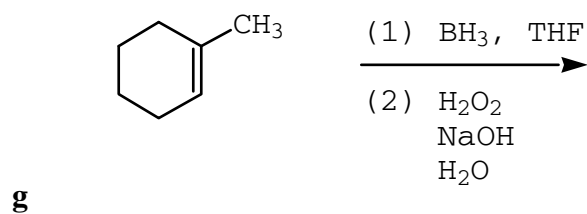
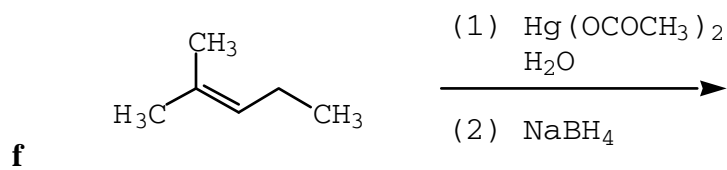
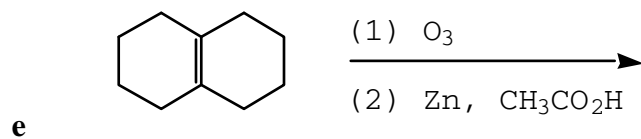
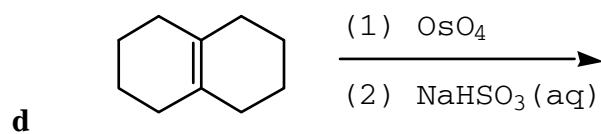
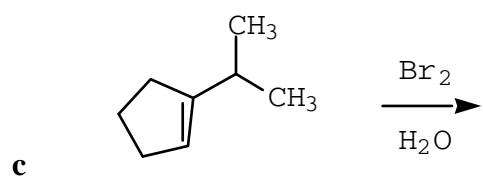
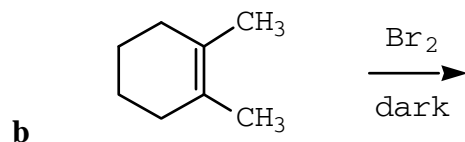
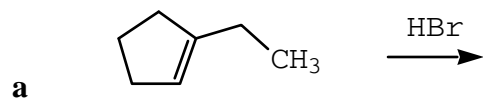
4 Assign stereochemical designation (*E*, *Z*) to the following alkenes (do not name the molecule)

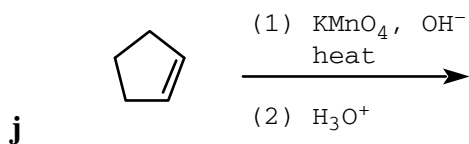
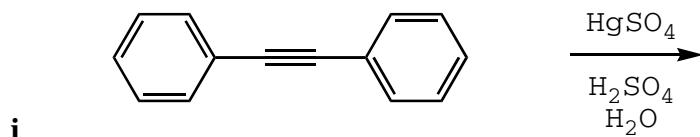
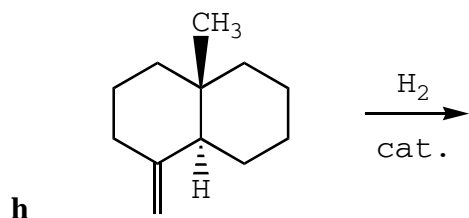


5 Write a detailed electron-pushing mechanism using the curved-arrow convention.

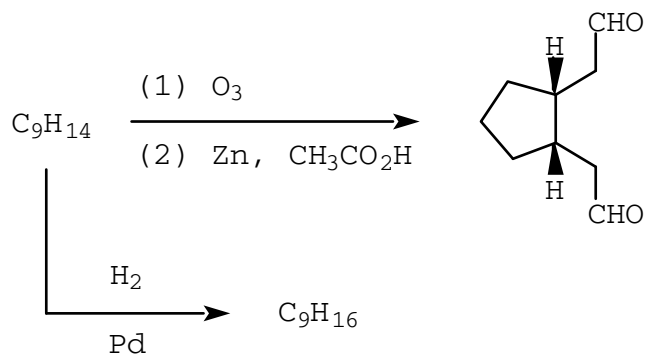


- 6 Predict the major organic product of these reactions, showing the major product's stereochemistry where appropriate. No carbocation rearrangements occur.





7 Deduce the structure of C_9H_{14} from the following information.



8 Write a detailed electron-pushing mechanism using the curved-arrow convention.

