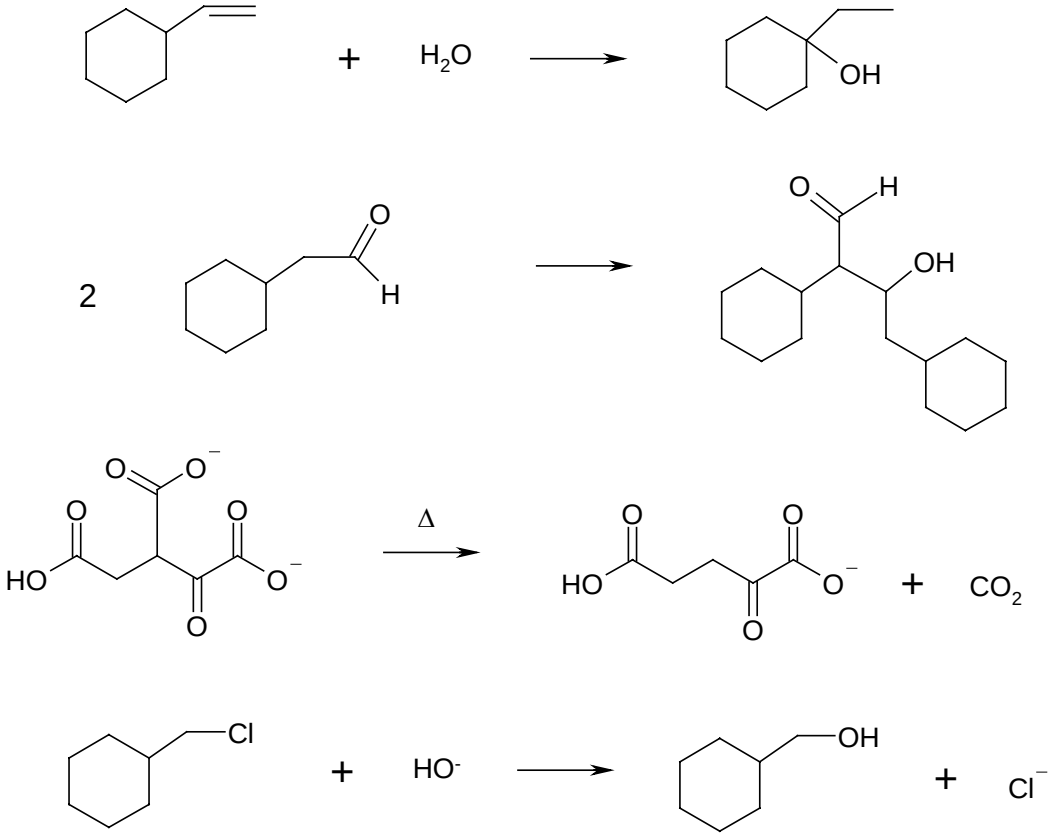
Vitamin Problems for Week 6: Chem 109C (Kahn)

A) Catalysis

Propose a catalyst or a principle of catalysis for each of the following reactions:



B) Chymotrypsin: True or false:

1) Chymotrypsin is a protease that cleaves peptide bonds on the C-terminal side of positively charged amino acids, such as lysine and arginine?
2) Chymotrypsin belongs to a family of enzymes called serine proteases because it contains an active site serine that participates in the catalysis?
3) The role of serine in serine proteases is to act as a good electrophile and pull electrons away from the carbonyl oxygen of the peptide bond?
4) Asp102, His57, and Ser 195 form a catalytic triad that serves to enhance the ability of serine to attack the substrate?
5) The chymotrypsin mechanism is an example of electrostatic and covalent catalysis?
6) Site-directed mutagenesis of His 57 to phenylalanine would give a mutant enzyme that is even more active than the wild-type chymotrypsin?