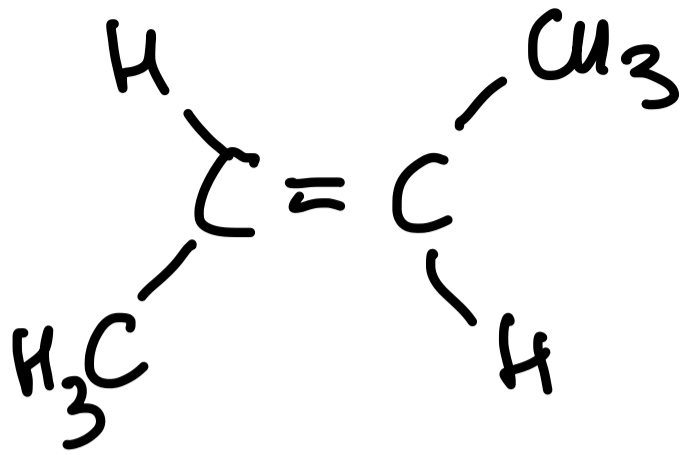
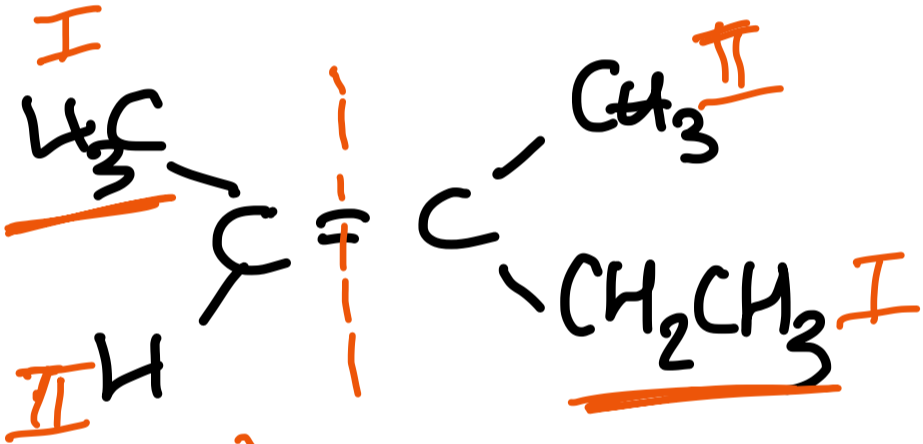


Cis-2-butene

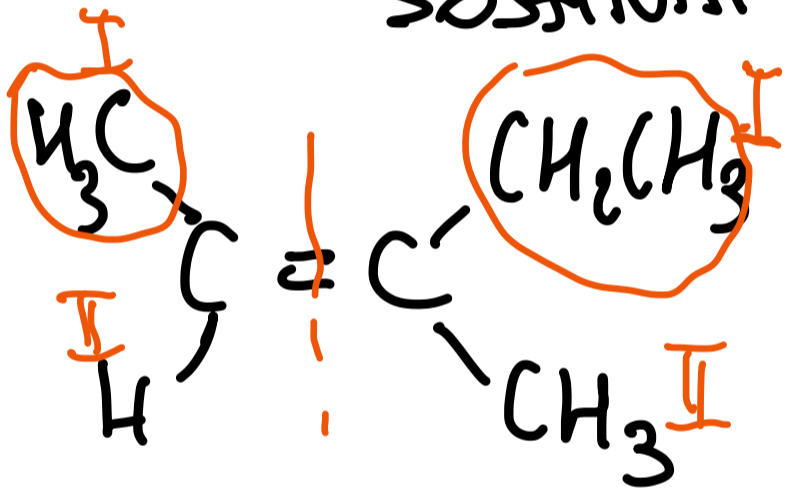


trans-2-butene

E/Z SISTEMA → tri- o tetra-sostituiti



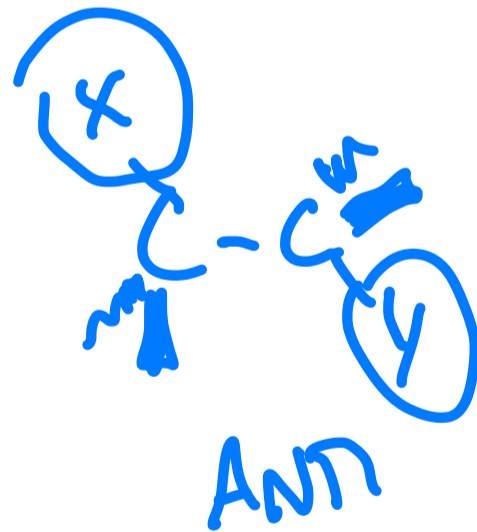
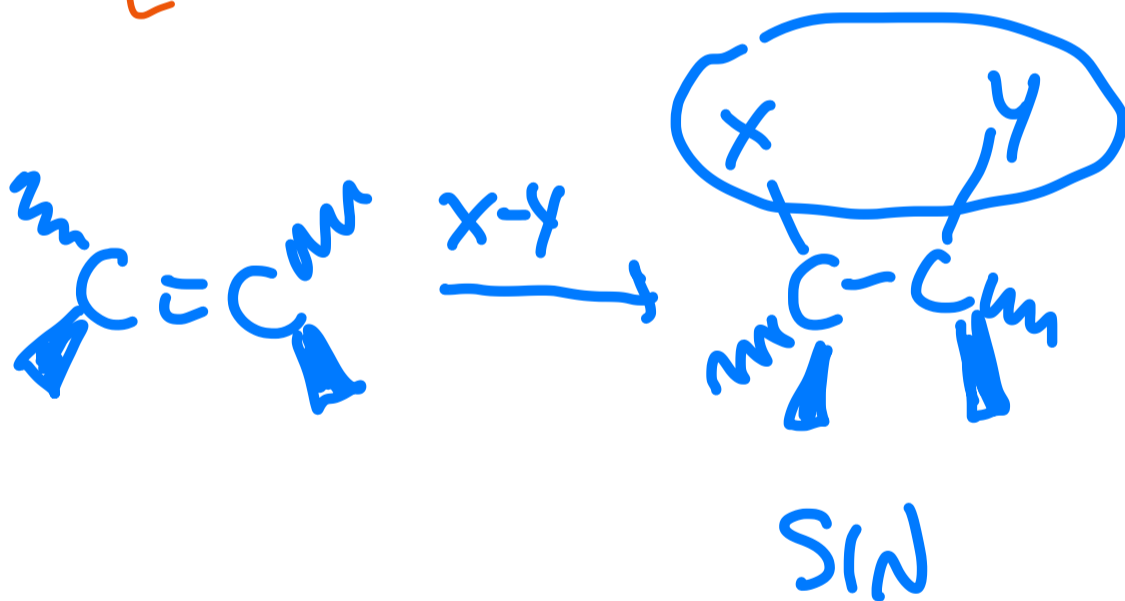
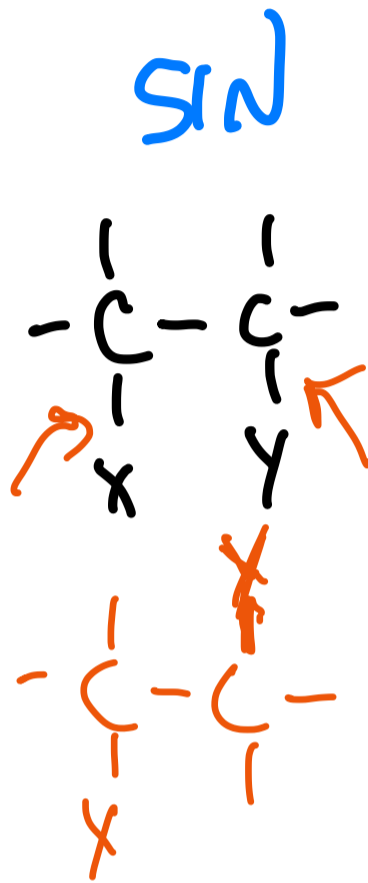
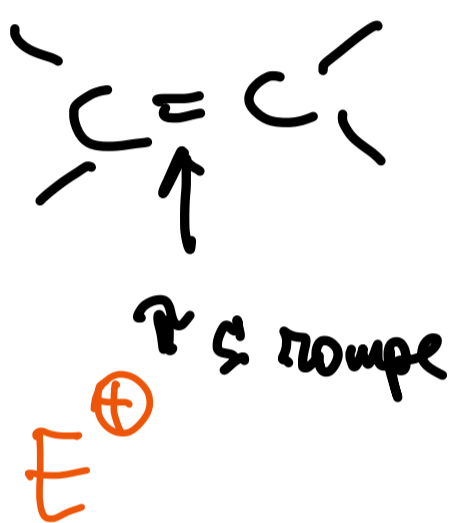
(E)-3-metil-2-pentene



(Z)-3-metil-2-pentene

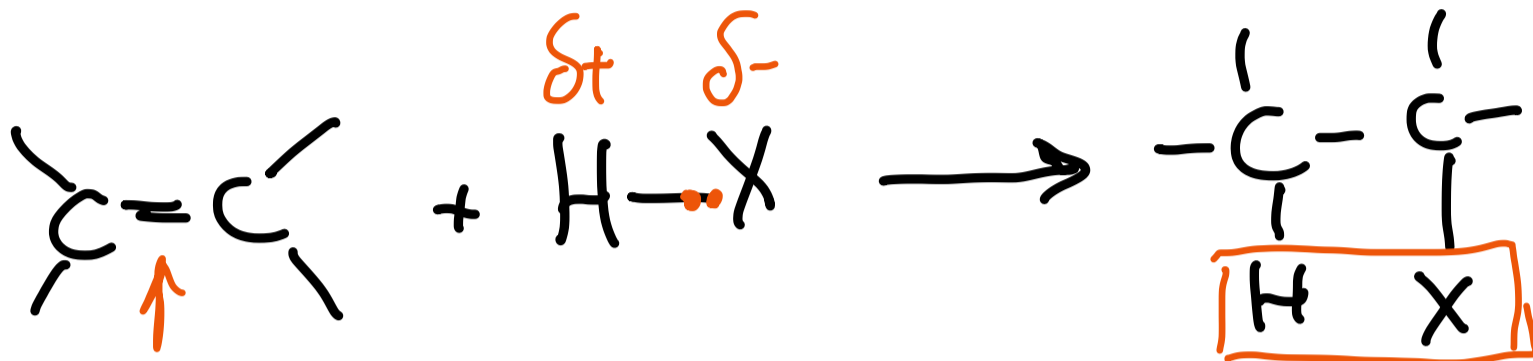
# REAZIONI DI ADDIZIONE

$\pi$  si rompe  
2  $\sigma$  si formano



# IDROALOGENAZIONE : acidi alogenidrici $HX$ $X = (Cl, Br, I)$

→ ALOGENURI ALCHILICI

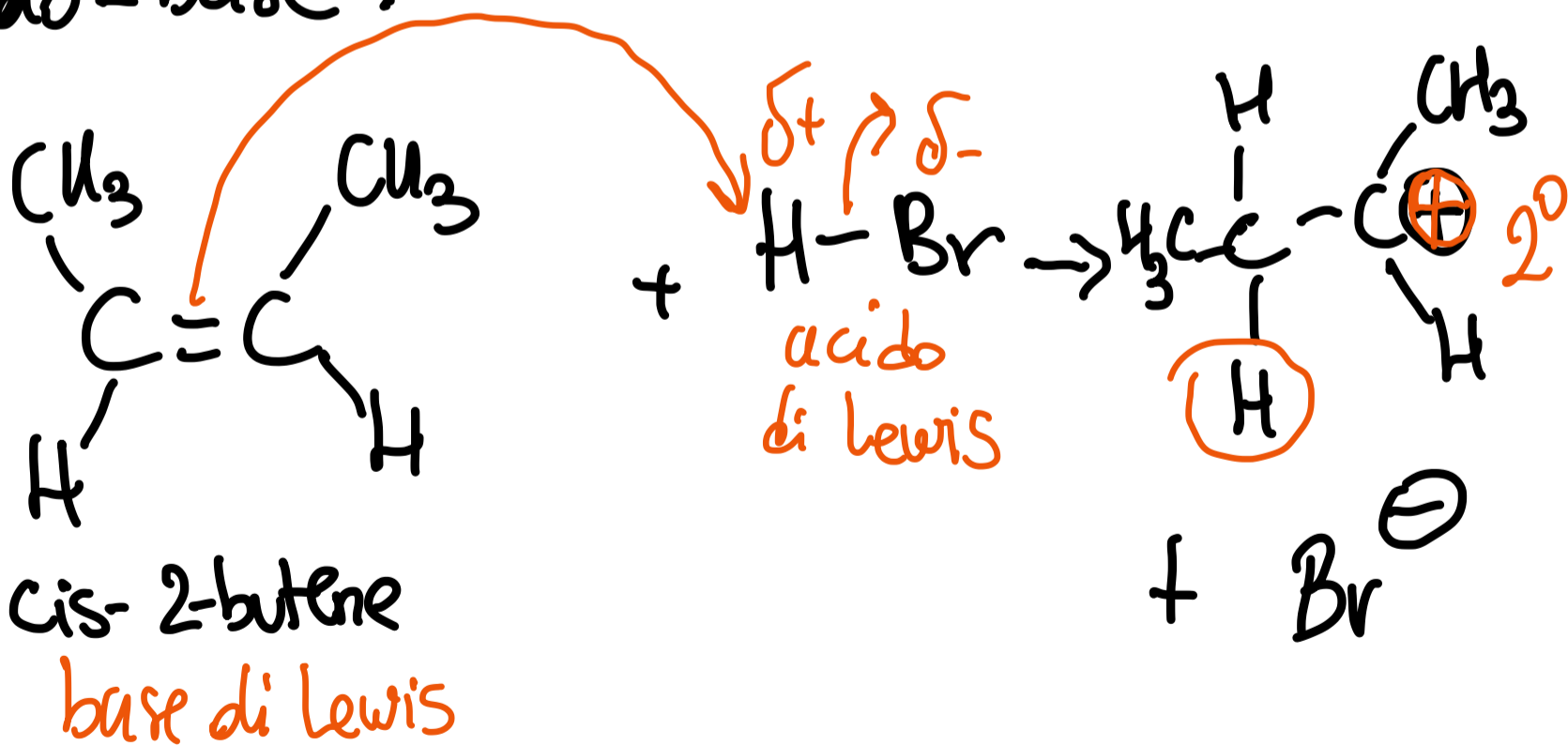


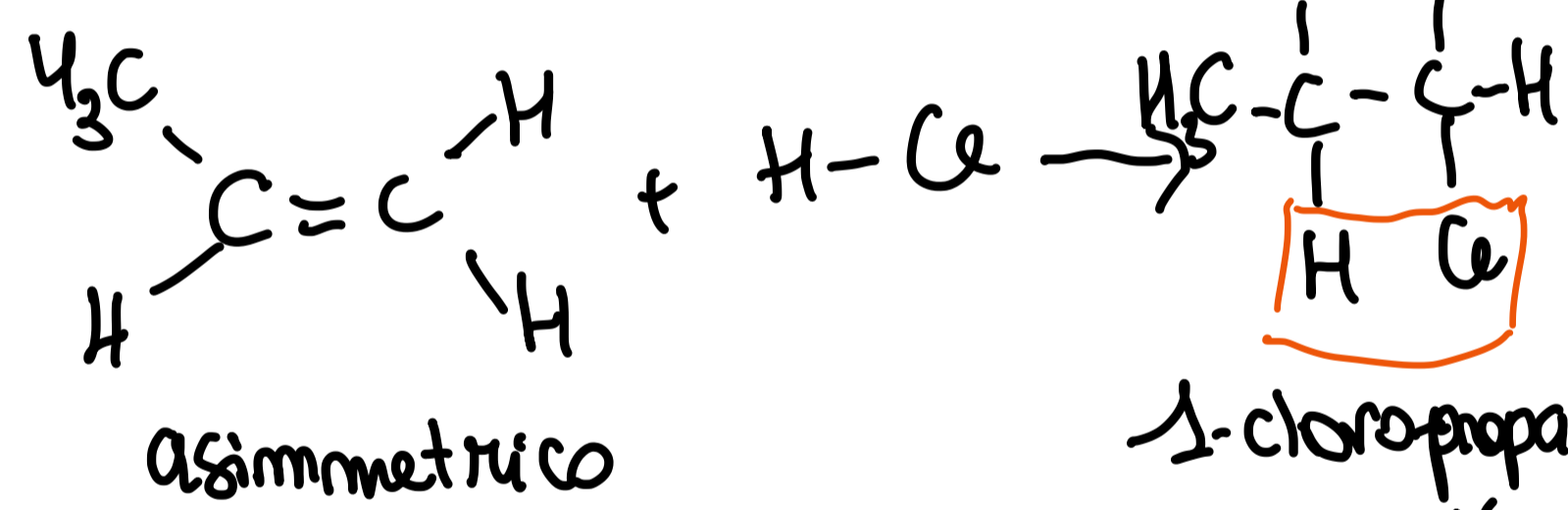
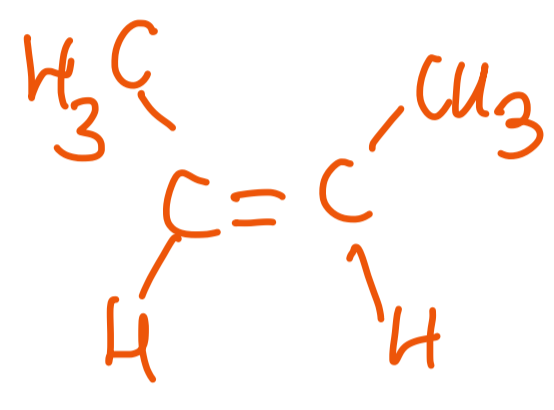
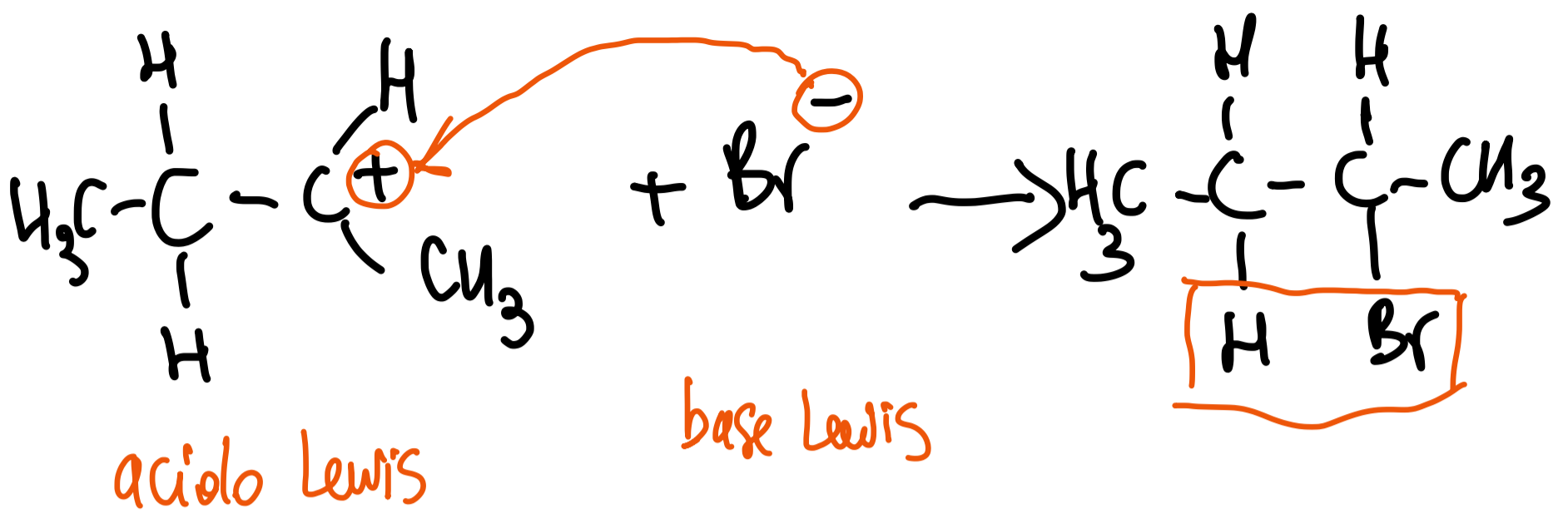
## ADDIZIONI ELETTROFILI

1) Addizione  $H^+$  con formaz. del carbocatione

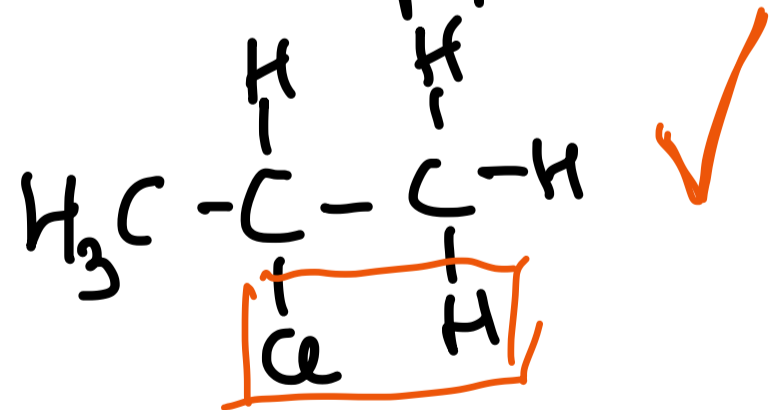
2) Attacco di  $X^-$

acido-base.





1-cloropropano



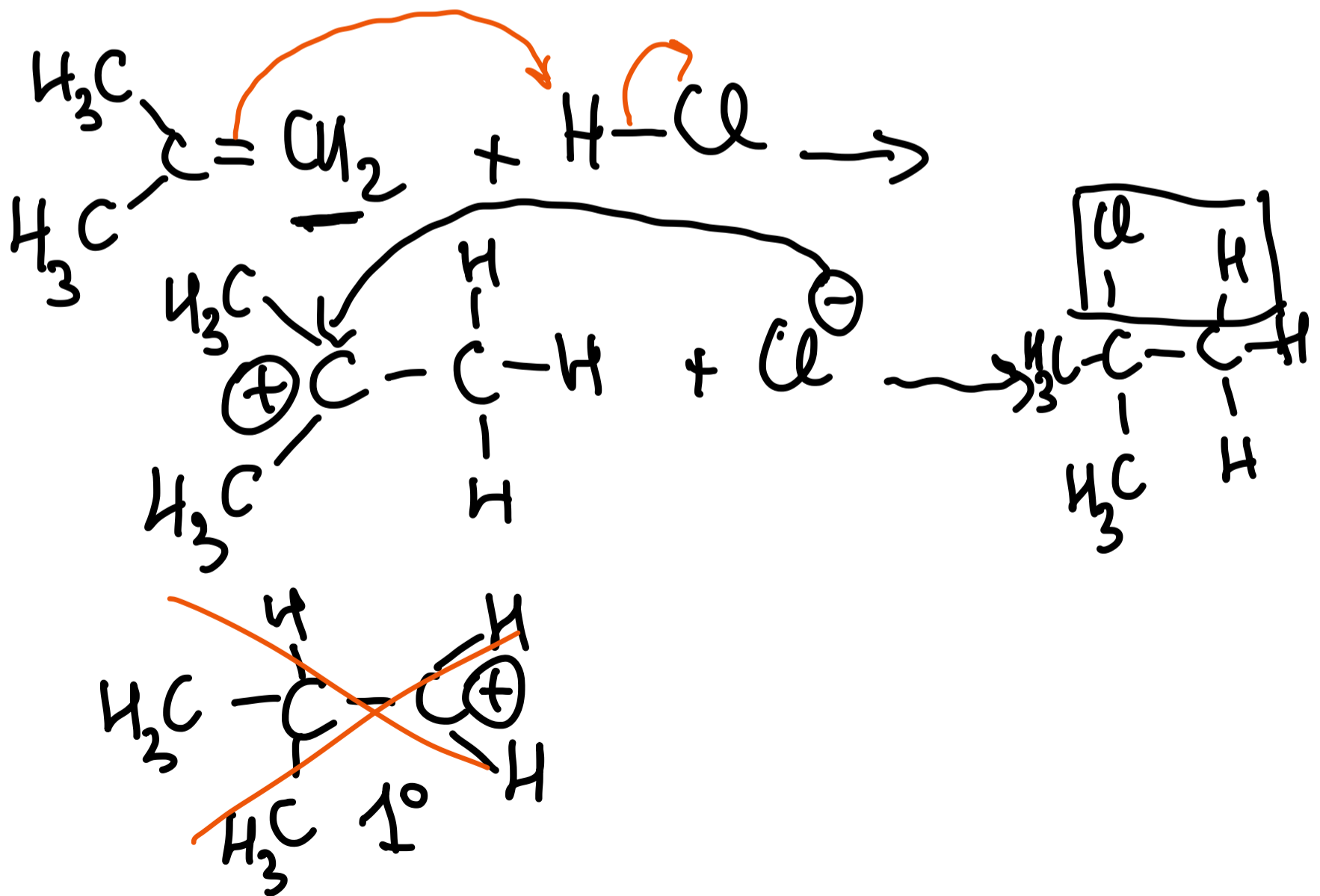
2-cloropropano

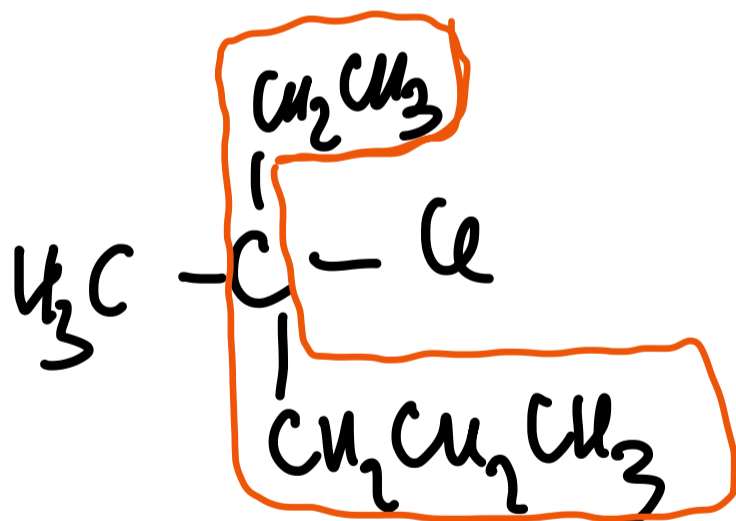
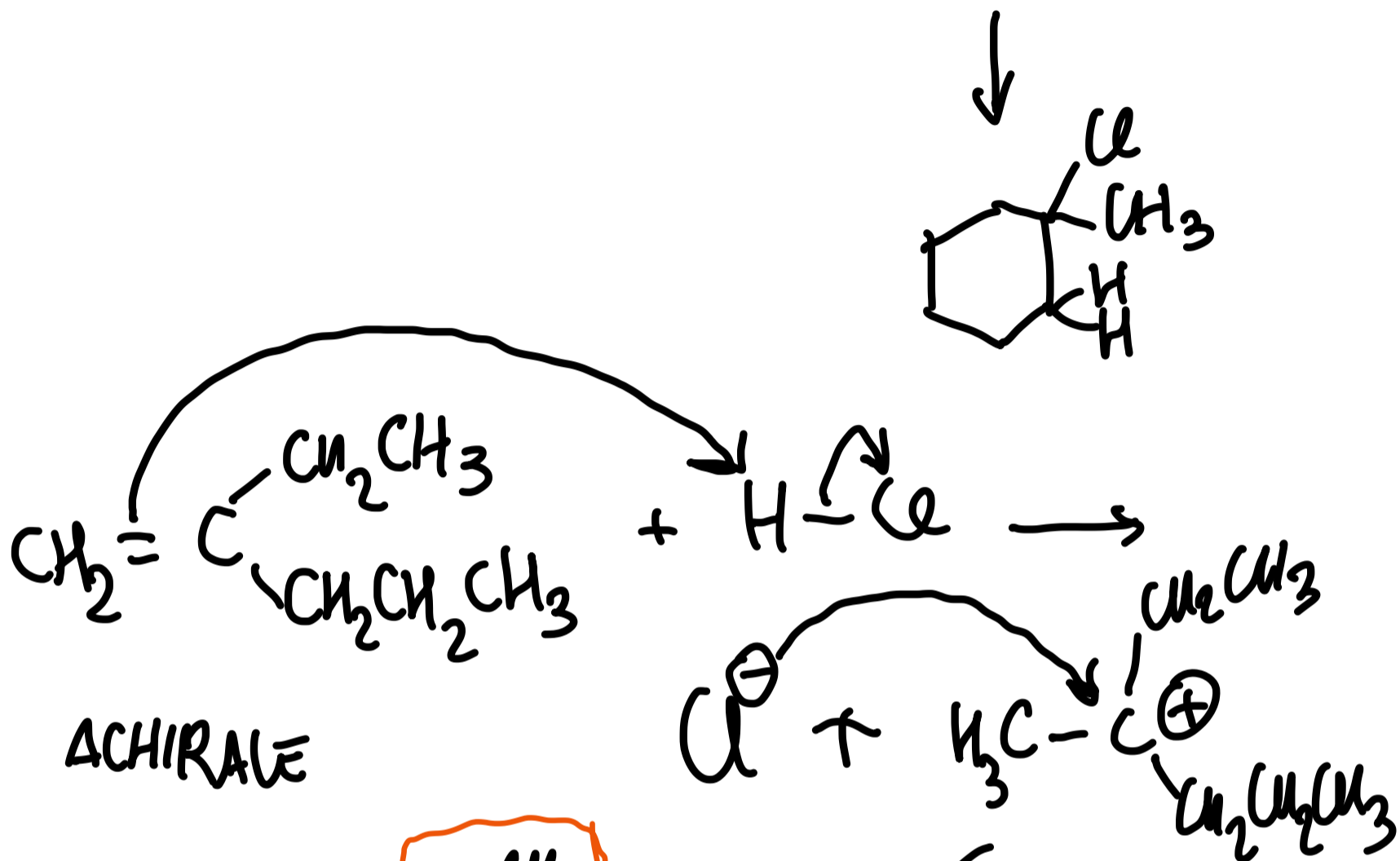
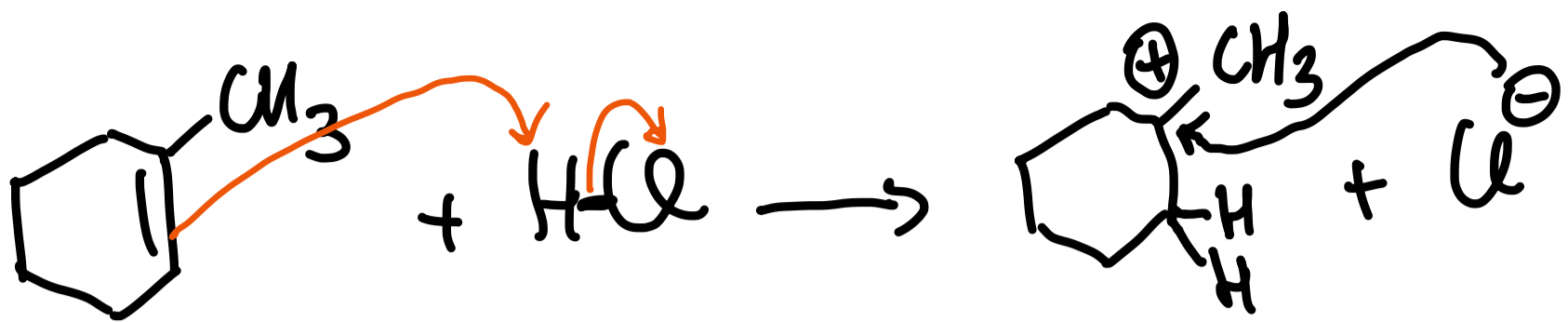
# REGOLA DI MARKOVNIKOV

↳ REGIOSELETTIVITA' DELL'ADDIZ. ELETTROFILA DI HX

↳ H si lega all'atomo di C meno sostituito (lega + H)

↳ H si lega al C meno sost. per formare il carbocatione + sostituito, + stabile

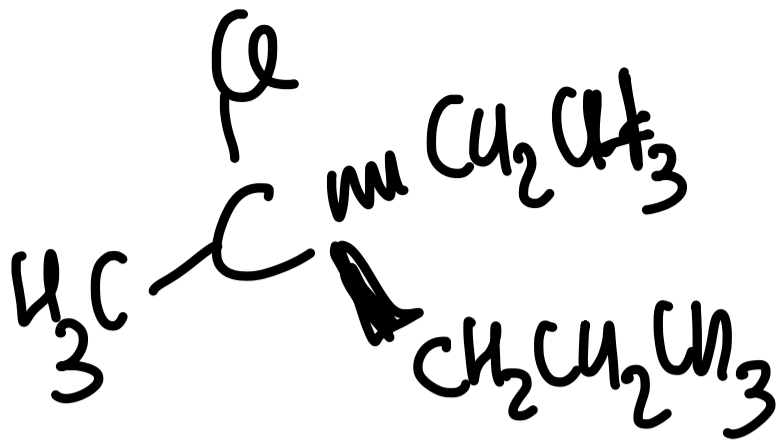




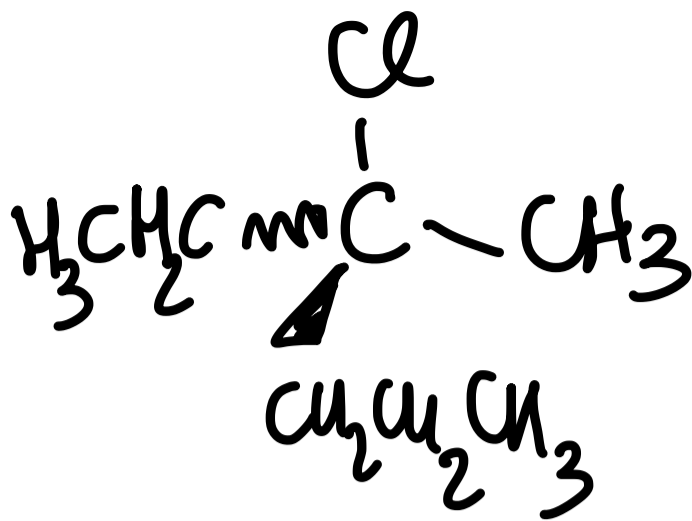
4 sost diversi  
CHIRALE

3-cloro-3-metil esano

→ 2 ENANTIOMERI (50%, 50%)  
↳ MISCELA RACEMICA



50%



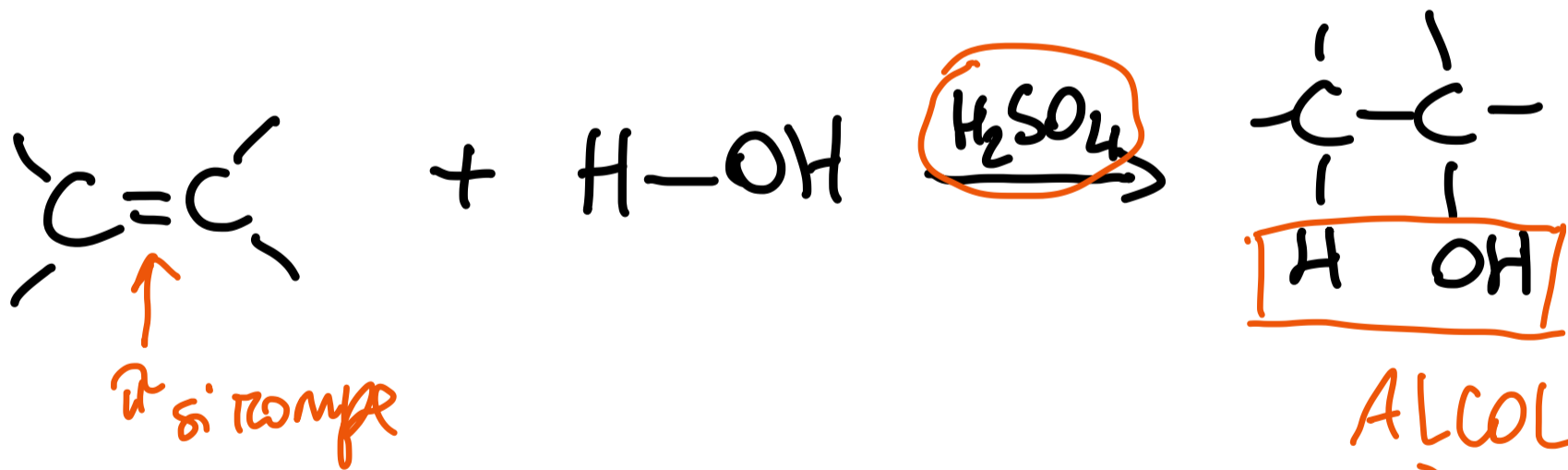
50%

ADDIZ. DI HX SIN O ANTI

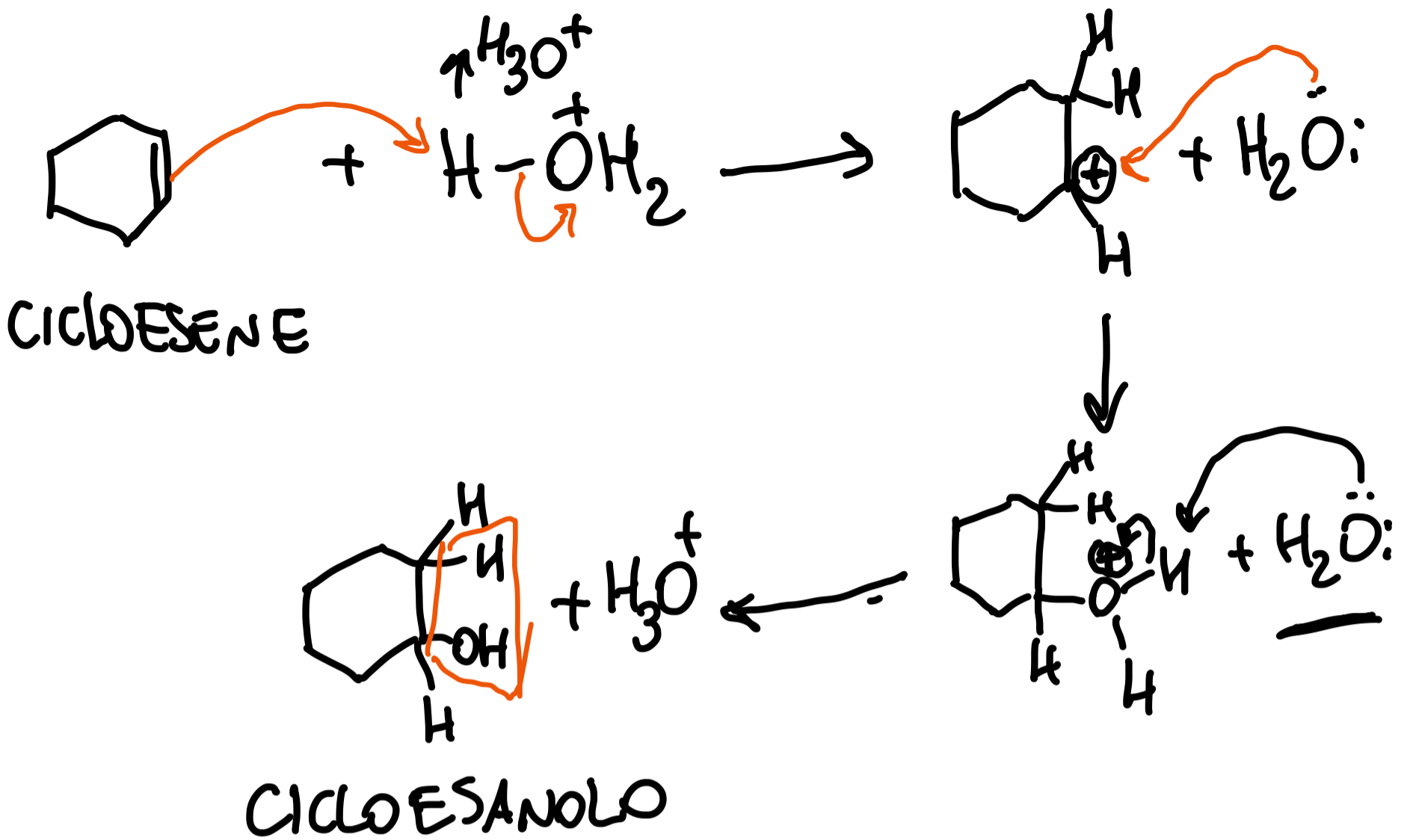
IDRATAZIONE

→ ADDIZIONE ELETTROFILA  
DI H<sub>2</sub>O

↳ FORMAZIONE DI ALCOL



ALCOL  
2 legami  
nuovi



RIDUZIONE =  $\downarrow \text{C}-\text{Z}(\text{C}-\text{O})$  oppure  
 $\uparrow \text{C}-\text{H}$

$\text{H}_2$  = IDROGENO MOLECOLARE  $\rightarrow$  AGENTE RIDUCENTE

IN PRESENZA di un catalizzatore metallico

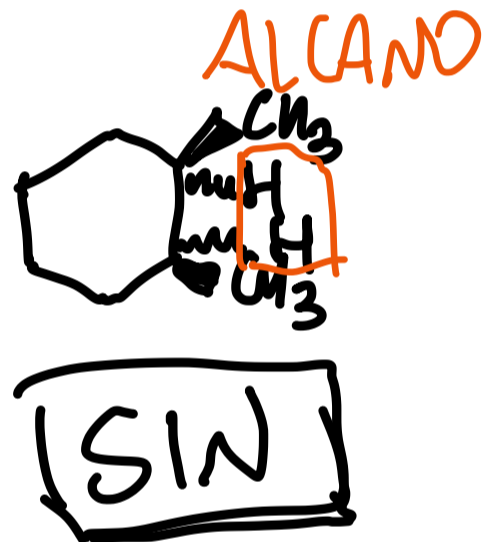
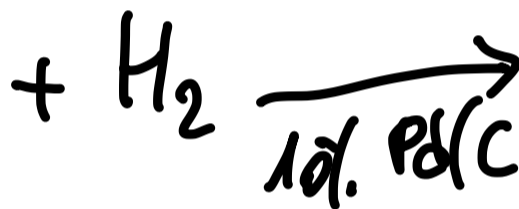
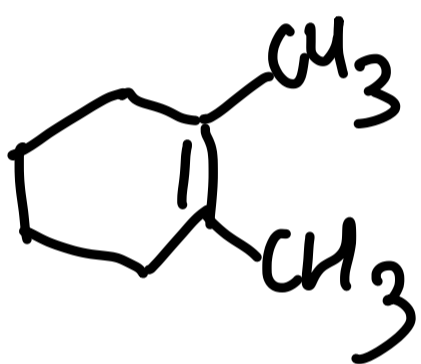
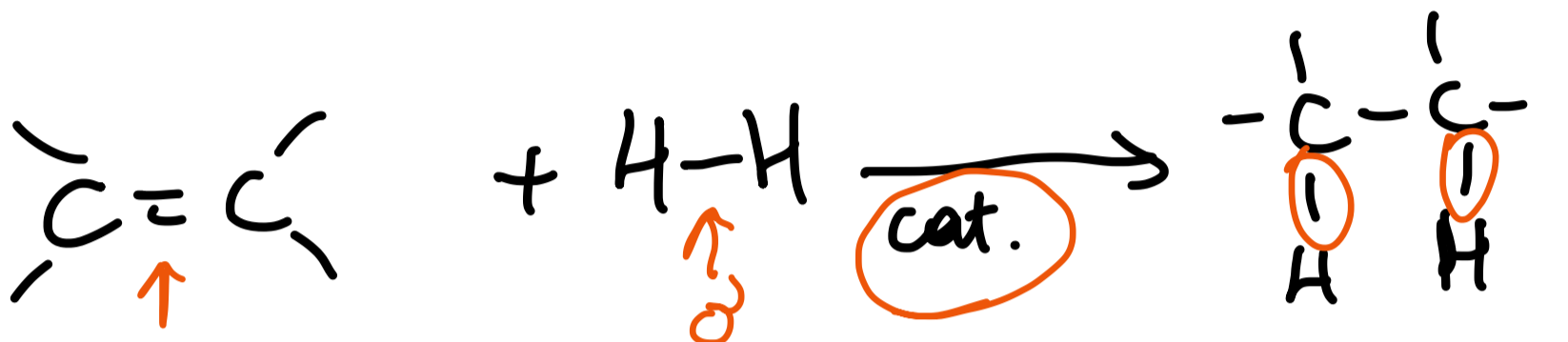
$\rightarrow$  Pd, Pt, Ni adsorbiti su carbone

10% Pd/C  $\rightarrow$  10% Pd  
 90% carbone

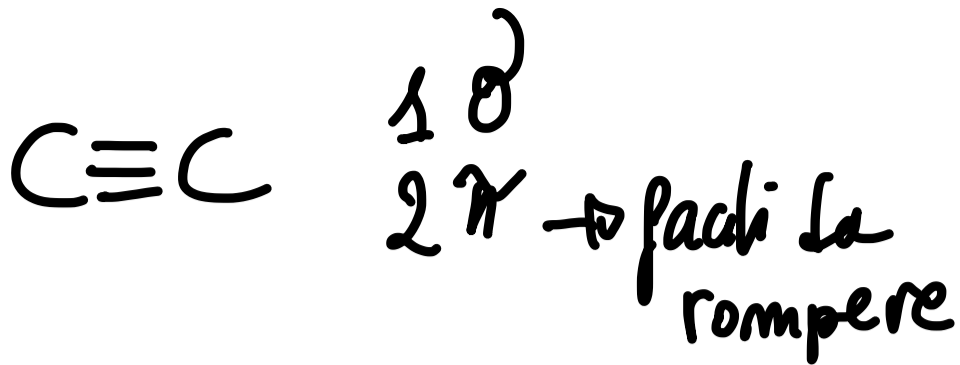


RIDUZ. ALCIENE con  $H_2 \rightarrow$  ALCANO

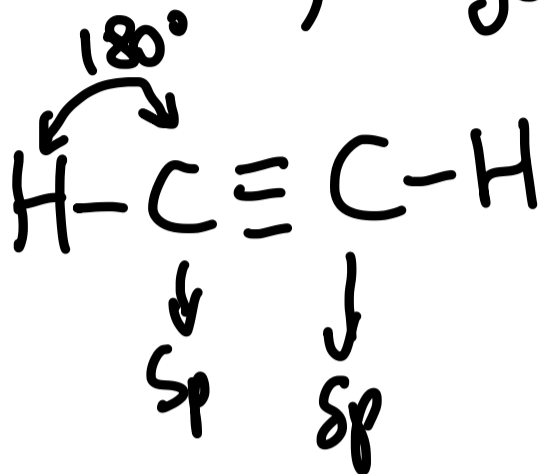
2 legami si rompono ( $\pi, \sigma$ )  $\rightarrow$  H-H  
si formano 2  $\sigma$  legami.



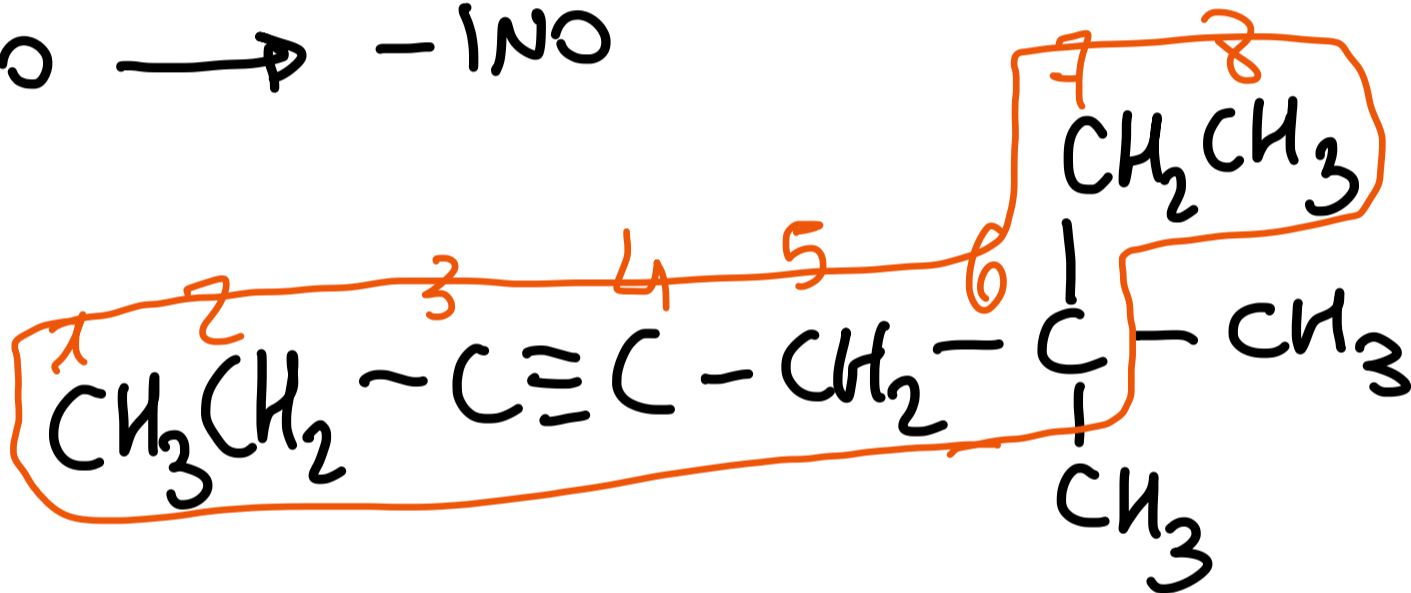
# ALCHINI



C sp  $\rightarrow$  lineare, angoli  $180^\circ$



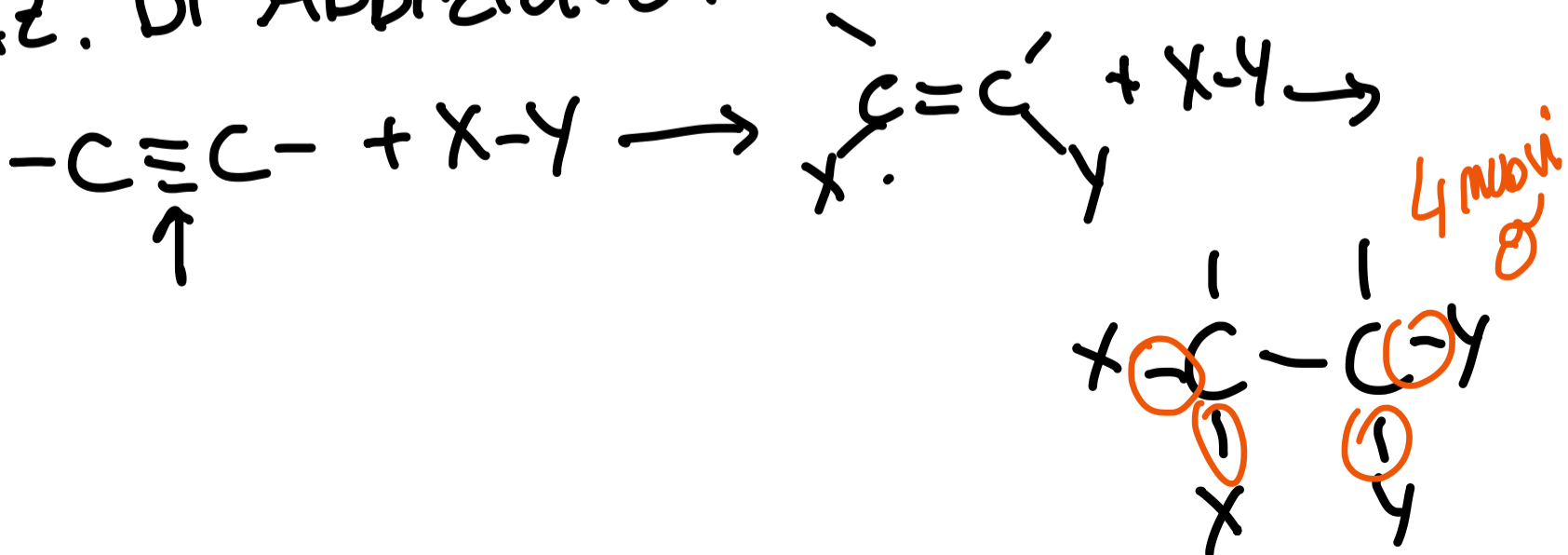
-ANO  $\rightarrow$  -INO

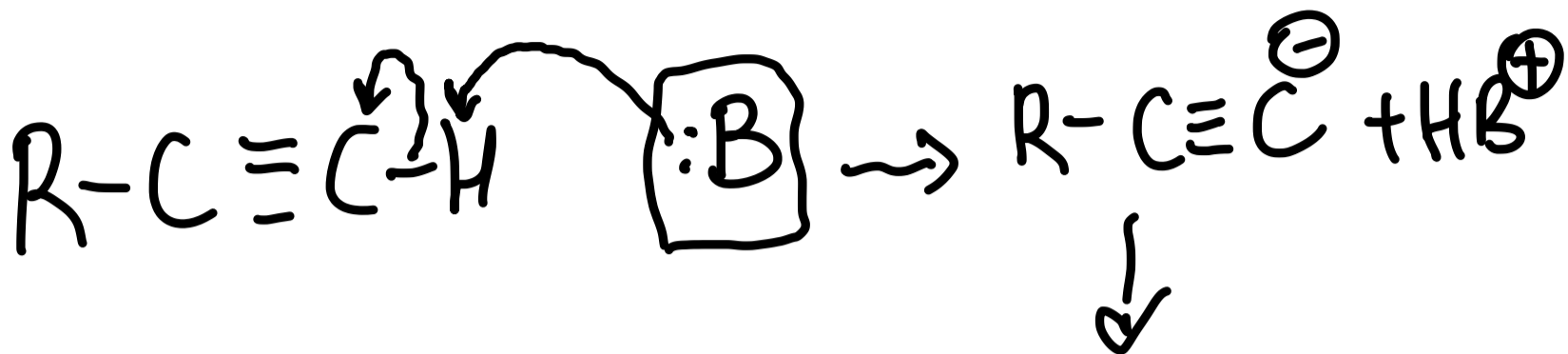


OTTANO  $\rightarrow$  OTTINO

6,6-DIMETIL-3-OTTINO

REAZ. DI ADDIZIONE:

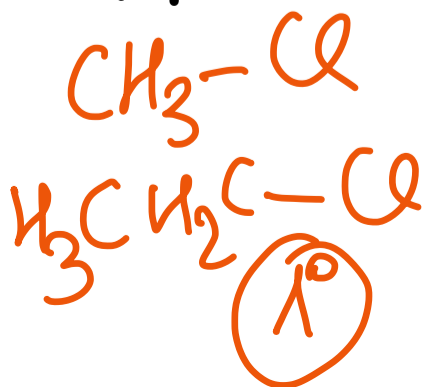
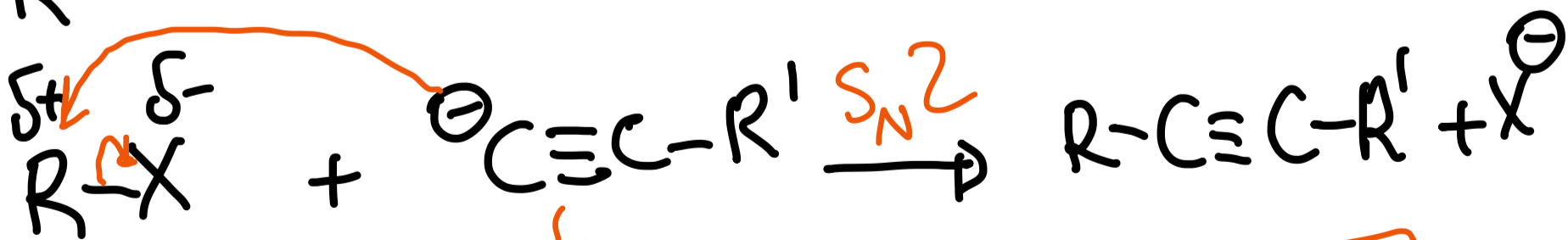
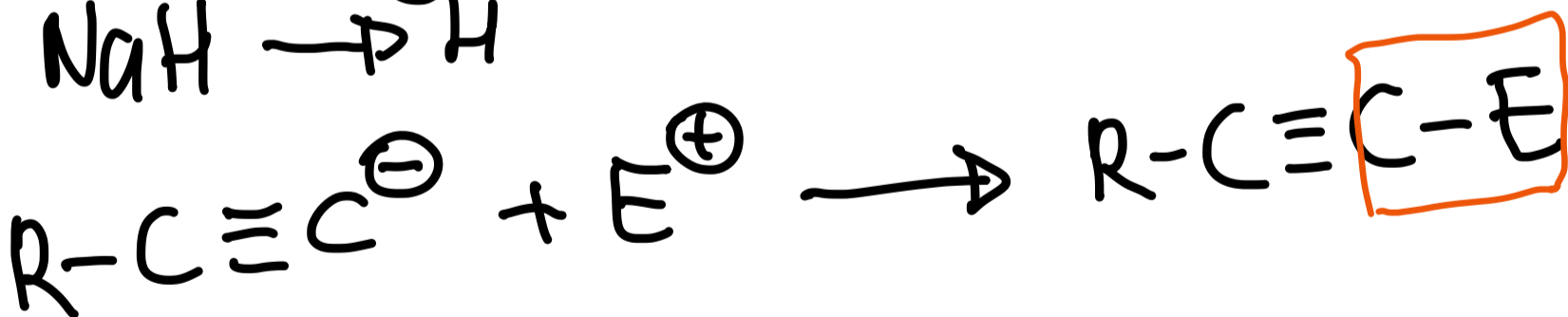
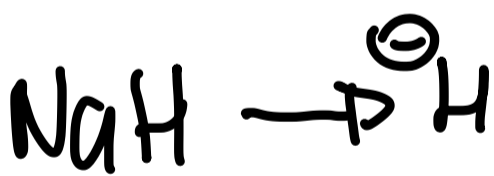




$pK_a \approx 25$       $:B$  il cui acido coniugato  $pK_a > 25$

$NH_2^{\ominus}$   $pK_a(38)$       $H^{\ominus}$   $pK_a 35$

$OH^{\ominus}, OR^{\ominus}$  (15, 18)



$\downarrow$   
 $Nu^-$  forte

$\boxed{\text{nuovi C-C}}$

Alcyl. Alchil 2°  $\rightarrow$  E2

