Ch 13

Note Title 10/28/2005

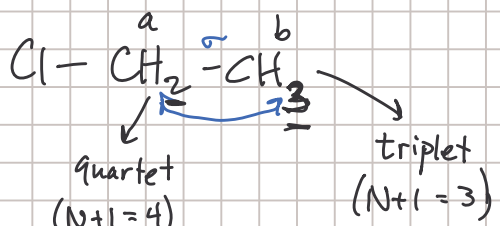
Exam 3 Nov 7th Mon

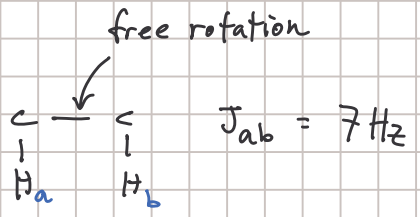
Coupling constants, J

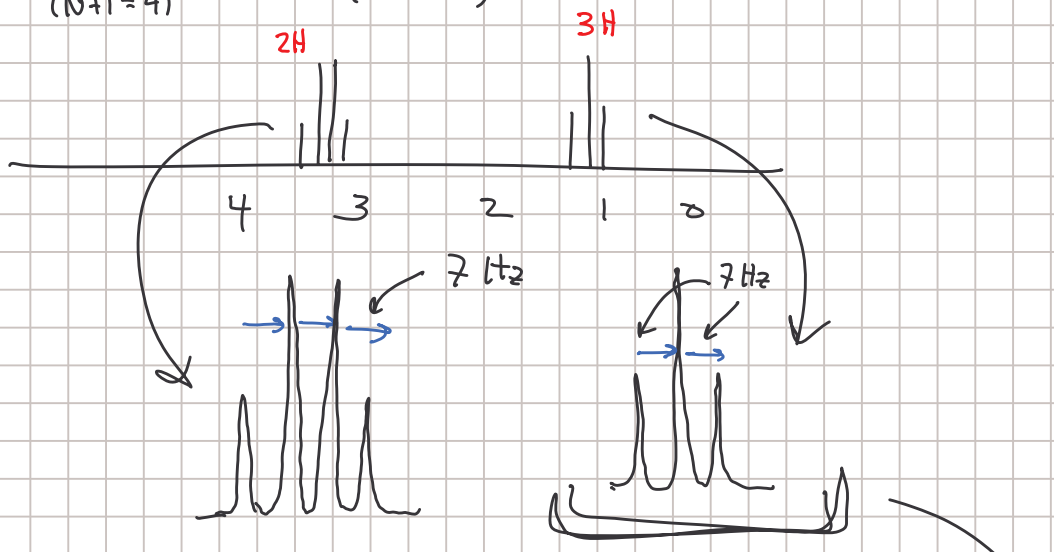
distance in Hz that a peak is split

same on any spectrometer

J = 7 Hz for free-rotation







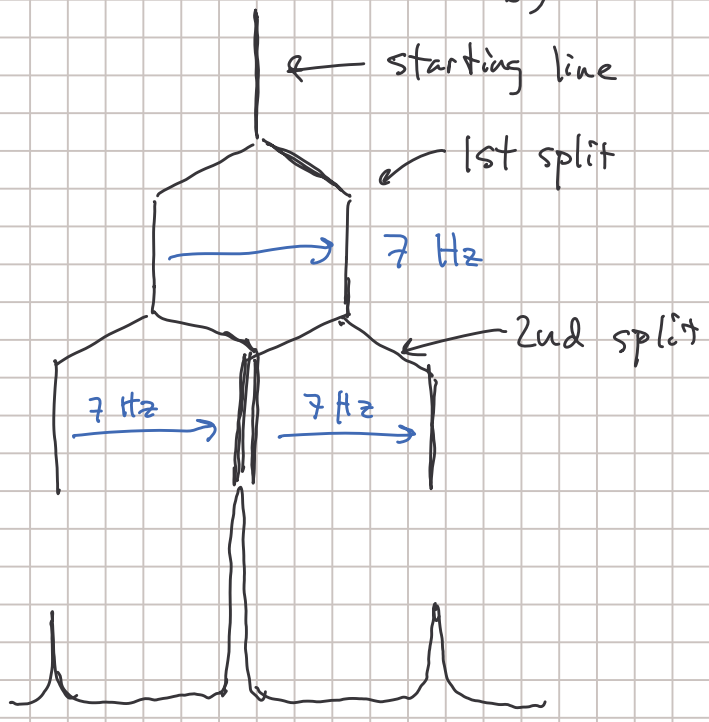
splitting tree

original peak is split once by each H on adj. carbons

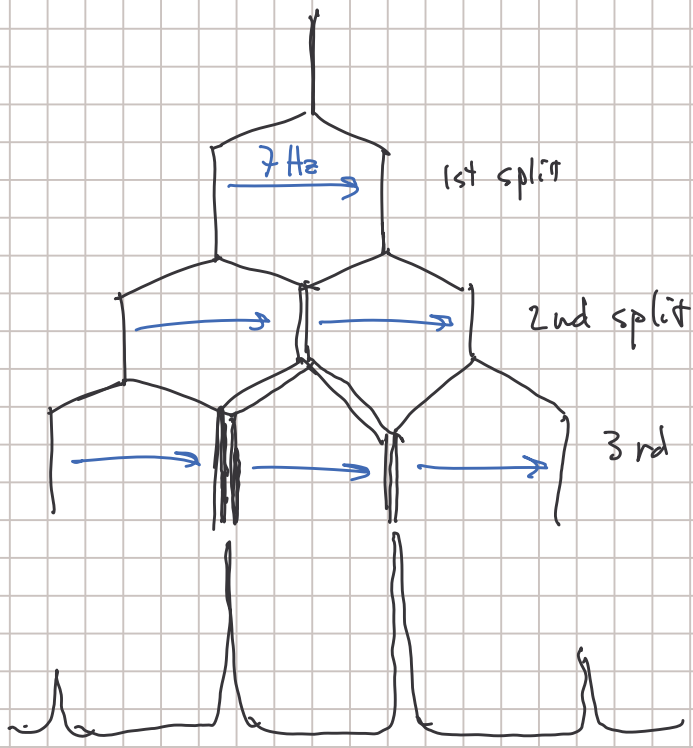
splitting tree

splitting tree for triplet (H_b)

$Cl-\underset{a}{CH_2}-\underset{b}{CH_3}$



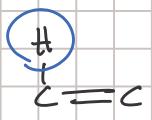
quartet (H_a) split 3 times by H_b

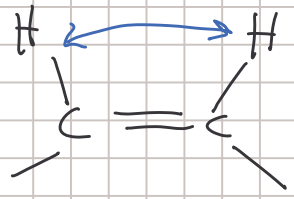


each splitting distance is 7 Hz.

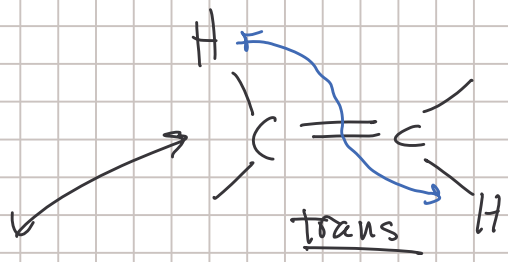
1 : 3 : 3 : 1 ratio of peaks

Vinyl H coupling constants

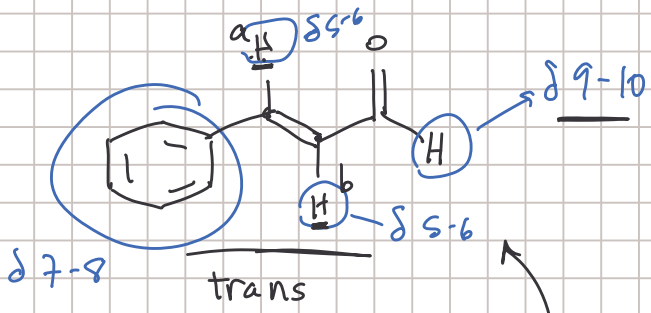


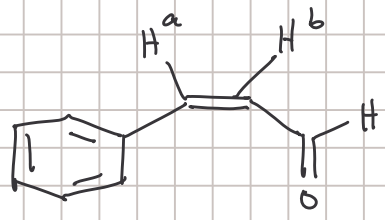


cis



trans

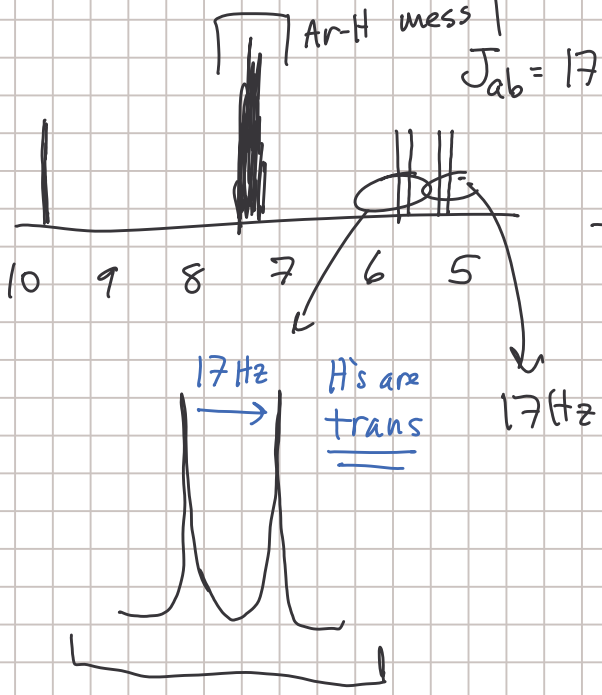


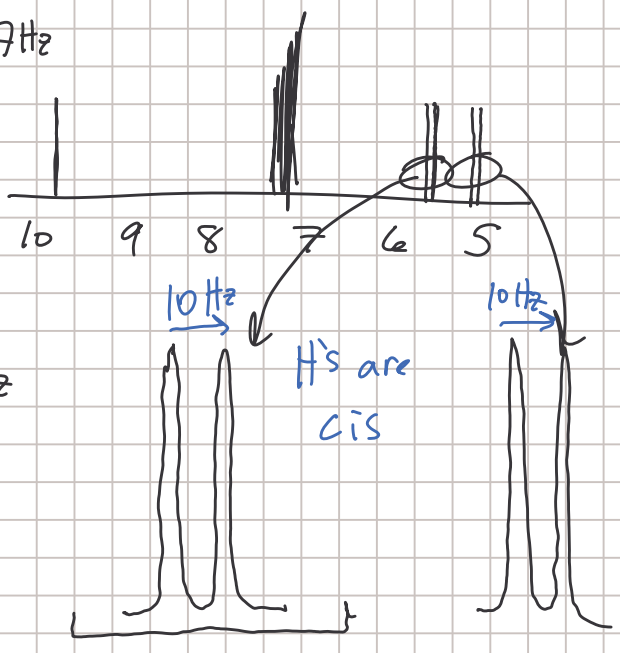


cis

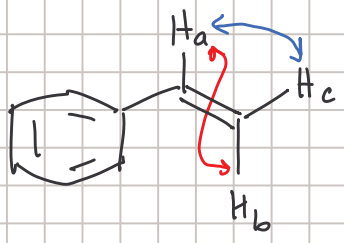
J_{ab} = 10 Hz

J_{ab} = 17Hz



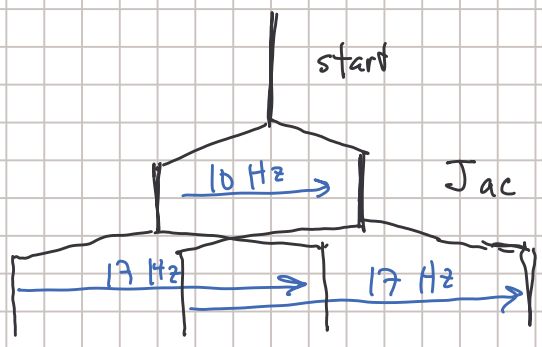


Complex splitting



H	δ
a	6.6 ppm
b	5.8
c	5.2

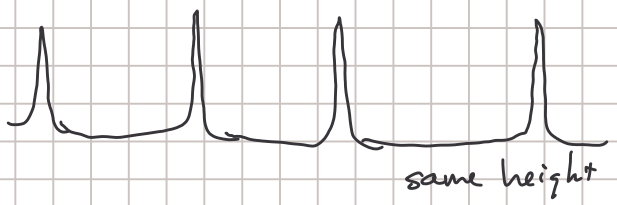
H_a cis to H_c (split by 10 Hz)
trans to H_b (split by 17 Hz)



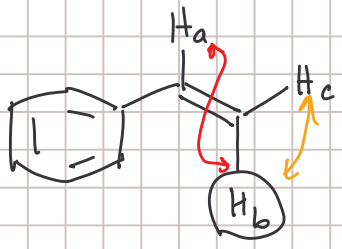
$J_{ac} = 10\ Hz$

$J_{ab} = 17\ Hz$

result:



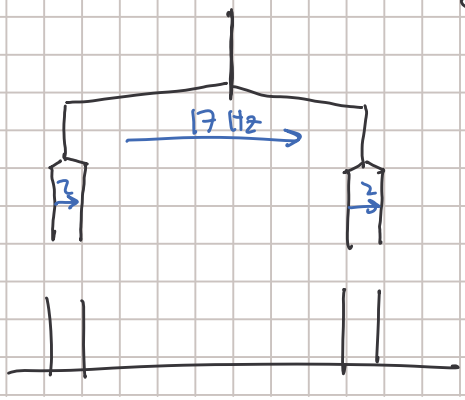
H_a



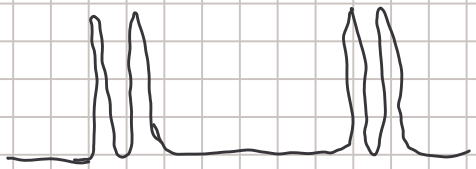
H_b is split by H_c because they're inequivalent

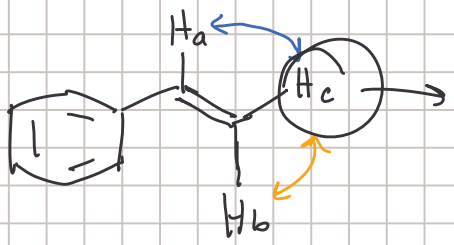
$J_{bc} = 2\ Hz$ (geminal H's on C=C)

$J_{ba} = 17\ Hz = J_{ab}$



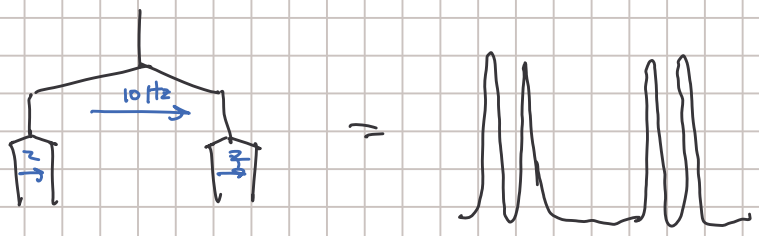
result: J_b =

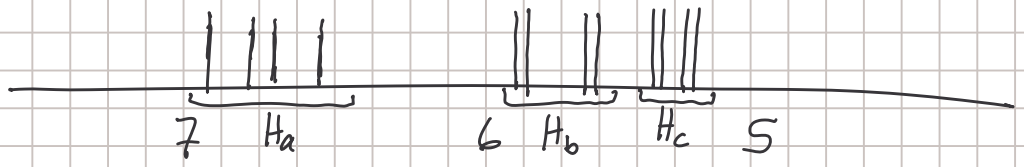




$J_{ca} = 10\ Hz$

$J_{cb} = 2\ Hz$





skip B.10