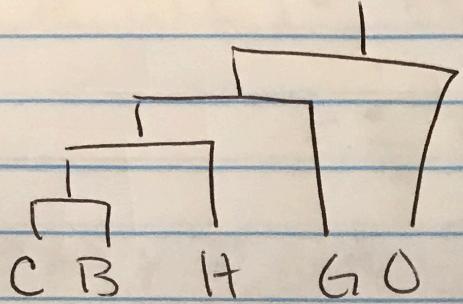


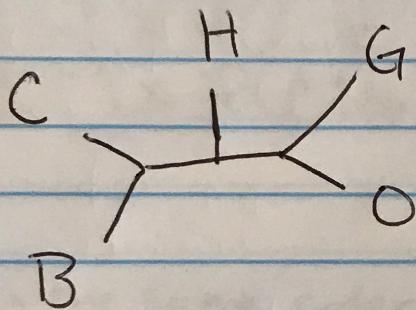
Homework #4

Question 1

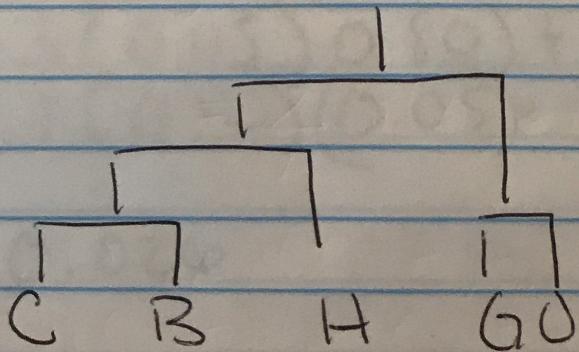
A)



B)



C) many answers, including



# Homework #4

## [Question 2]

$$A) P(C|DIT) = P(C|C, G, X | T)$$

$$= \sum_X P(X) \times P(C|X, t_1) \times P(G|X, t_2)$$

$$\begin{aligned} &= P(A) \times P(C|A, t_1) \times P(G|A, t_2) + \\ &P(C) \times P(C|C, t_1) \times P(G|C, t_2) + \\ &P(G) \times P(C|G, t_1) \times P(G|G, t_2) + \\ &P(T) \times P(C|T, t_1) \times P(G|T, t_2) \end{aligned}$$

B) (in the same order as above)

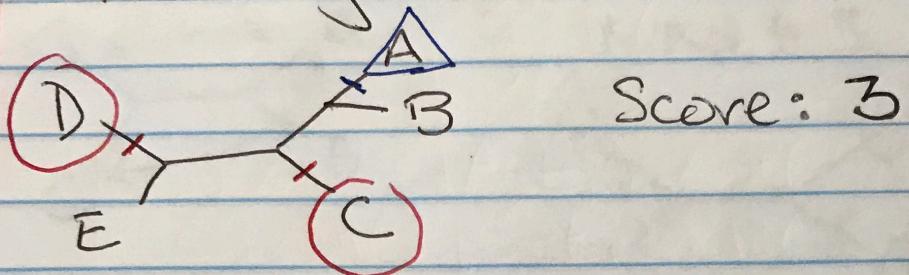
$$\begin{aligned} &= 0.2(0.05)(0.10) + \\ &0.3(0.80)(0.05) + \\ &0.3(0.05)(0.80) + \\ &0.2(0.10)(0.05) \end{aligned}$$

$$= 0.024$$

# Homework #4

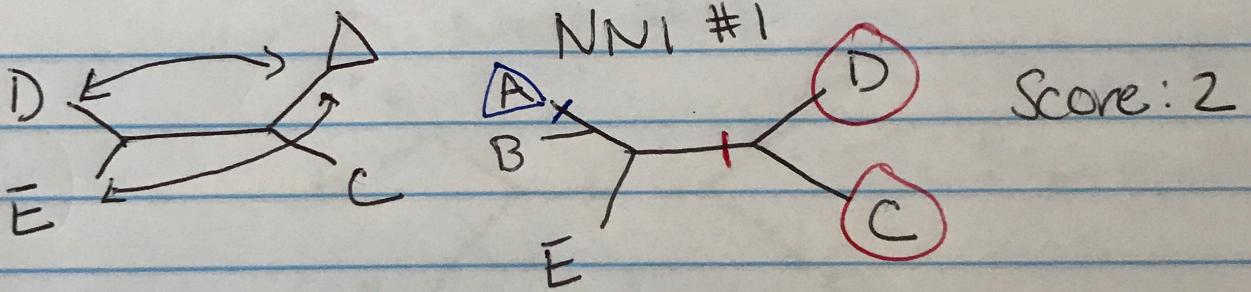
## Question 4

Starting tree

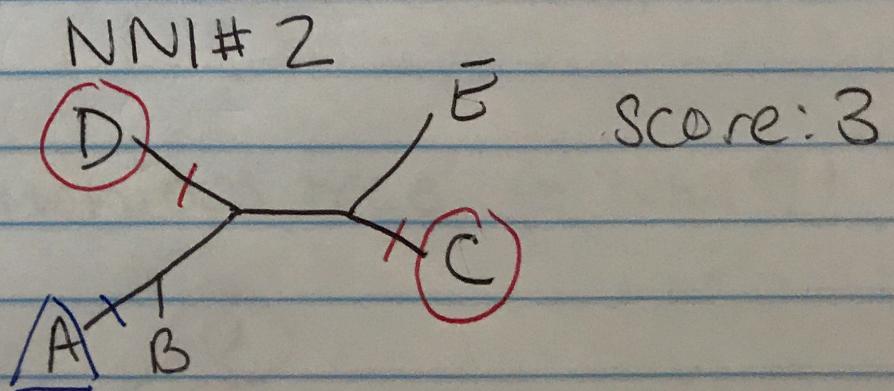


Score: 3

4 clade subtree #1



NNI #1  
Score: 2

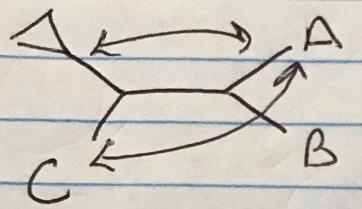


NNI #2  
Score: 3

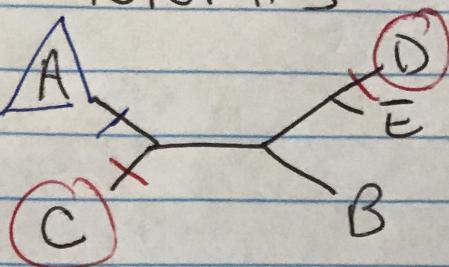
# Homework #4

## Question 4 contd]

4 clade subtree #2

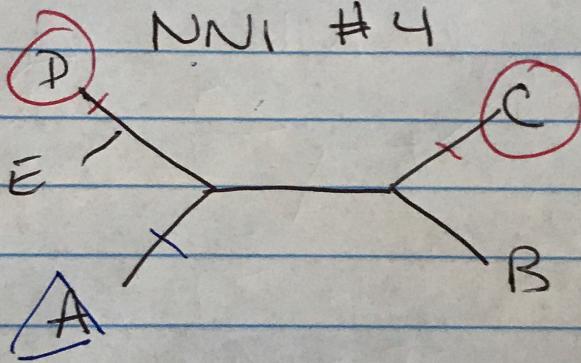


NNI #3



Score: 3

NNI #4



Score: 3

most parsimonious tree is NNI #1

