

Math 55, **Special Homework**

Due tomorrow (Wednesday, May 6) in your section

*The two homework questions below, if you solve both of them correctly (and you show your work), will count for **one extra quiz point**. This is a bonus in addition to the five quiz points already awarded.*

- (1) In today's class we discussed the number $a_{n,m}$ of alignments of a sequence of length m and a sequence of length n , and we derived a recurrence relation for that number. We also saw that $a_{4,4} = 321$. Compute the number $a_{5,5}$ of alignments of two sequences of length five.

- (2) Let τ_n denote the number of distinct phylogenetic trees whose leaves are labeled by the set $\{1, 2, 3, \dots, n\}$. In today's class, we saw that $\tau_3 = 1$, $\tau_4 = 1 + 3$, $\tau_5 = 26 = 1 + 10 + 15$. Compute the number τ_6 of distinct phylogenetic trees with leaves labeled by $\{1, 2, 3, 4, 5, 6\}$.