

Name: _____
Bioinformatics Quiz #1 [100 pts]
02/03/2010

1)

What are three differences between Smith-Waterman and Needleman-Wunsch [6 pts]?

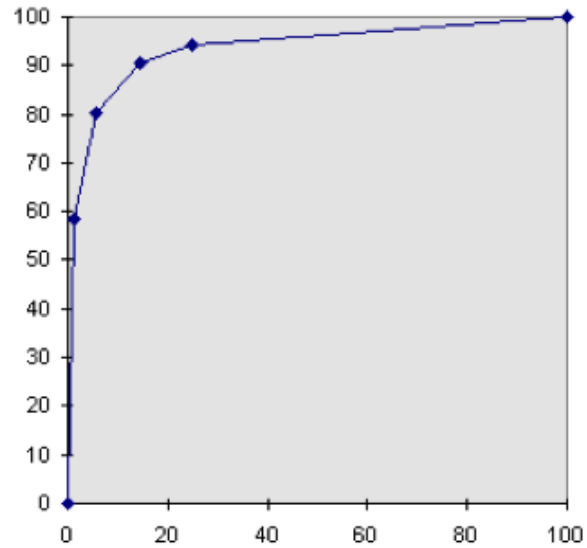
2)

Use the appropriate dynamic programming algorithm to **LOCALLY** align the sequences below. Use +2 for a match, -2 for a mismatch, and -1 for a gap.

Show **ALL** optimal alignments and give the corresponding scores. [50 points]

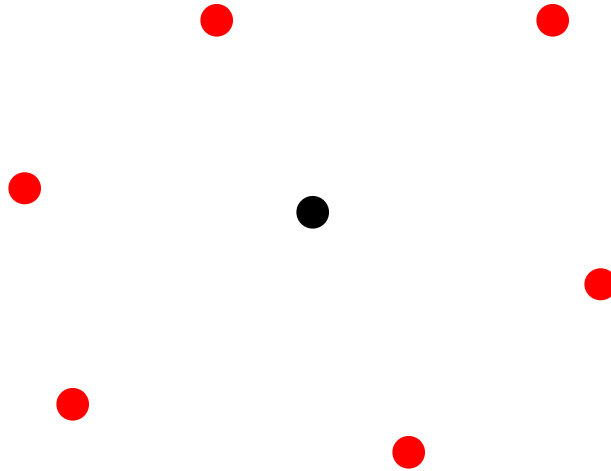
		C	G	G	A	T
C						
G						
A						
T						
A						

3. In the following ROC (Receiver Operating Curve) label the axes and also define each axis in terms of true positives (TP), true negatives (TN), false positives (FP), and false negatives (FN) [16 pts].



4. Which statistical distribution is used to assess the statistical significance of sequence alignments and why [6 pts]?

5. Draw the Voronoi volume for the central atom (black circle) in the figure below [10 pts]:



6. Label the four panels below in the red boxes [12 pts]:

