1. Let \( s = AACGAT \) and \( t = ACTCT \). Let scores be 2 for match an -2 for mismatch and use the linear gap penalty \( \gamma(g) = -3g \). Find an optimal global alignment of \( s \) with \( t \).

2. Let \( s = AACAGTATCGCT \) and \( t = CAGGTAT \). Let scores be 3 for match an -2 for mismatch and use the linear gap penalty with \( \gamma(g) = -3g \). Find an optimal local alignment of \( s \) with \( t \).

3. Let \( s = PHAAWAE \) and \( t = APEAWE \). Use the linear gap penalty function \( \gamma(g) = -3g \) and the scores from Example 42 in Notes to find
   - an optimal global alignment of \( s \) and \( t \),
   - an optimal local alignment of \( s \) and \( t \).

4. Let \( s = ACAGT \) and \( t = AAACAGGTATATGTCACT \) with scores 3 for match an -2 for mismatch and use the linear gap penalty with \( \gamma(g) = -3g \). Find an optimal semi-global alignment of \( s \) with \( t \).

5. Find an optimal global alignment of \( PHHAWE \) with \( HHWAE \). Use the linear gap penalty \( \gamma(g) = -4g \) and PAM250 as a scoring matrix (you can generate the matrix at http://www.cmbi.kun.nl/bioinf/tools/pam.shtml or use one from literature).

6. Repeat the previous exercise with local instead of global alignment.