1. [Exc 28.1-4 CLRS]  
Prove that the product of two lower-triangular matrices is lower-triangular.  
(Hint: Use the fact that certain entries in the two matrices are zero to show that certain entries in their product are zero.)

2. [Exc 28.3-1 CLRS]  
Solve the equation given by forward substitution. Show all the necessary working.

3. [Exc 32.1-2 CLRS]  
Suppose that all characters in the pattern \( P \) are different. Show how to accelerate NAIVE-PATTERN-MATCHER to run in \( O(n) \) on an \( n \)-character text \( T \).

4.  
With respect to the Boyer-Moore algorithm, compute the \( \lambda \) and \( \gamma \) functions for the pattern \( P = 0101101201 \) and the alphabet \( \Sigma = \{0, 1, 2\} \).