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Math 314
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COSC/MATH - 314

Assignment 2

Problem 1: Exercise 10, page 56 (to convert to numbers, use a=0, b=1).

Solution:

Problem 2: Exercise 13, page 56 (if you want to compute the inverse of the matrix, see section 3.8)

Solution:

Problem 3: Exercise 14, page 56 . (Note: The matrix M has 4 entries, so there are 4 unknowns, and to determine them you need 4 equations.) Since the given cipher-text/plaintext pair has 6 letters, you can form 6 equations. You need to choose 4 of them, so that the system that results can be solved.)

Solution:

Problem 4: The following ciphertext has been obtained by Vigenere encryption.

ocwyikoooniwugpmxwktzdwgtssayjzwyemdlbnqaaavsuwdvbrflauplooubfgq
hgcscmgzlatoedcsdeidpbhtmuovpiekifpimfnoamvlpqfxejsmxmpgkccaykwfzp
yuavtelwhrhmwkbbvgtguvtefjlodfefkvpxsgrsorvgtajbsauhzrzalkwuowhgedef
nswmrciwcpaaavogpdnfpktdbalsisurlnpsjyeatcuceesohhdarkhwotikbroqrdfm
zghgucebvgwcdqxgpbgqwlpbdaylooqdmuhbdqgmyweuik

a. Use displacement of 5 and 6. Which displacement produces the largest number of coincidences?

b. Find the key.

c. Find the plaintext.

Solution: