Math 3160 - Quiz 7

Name:_____

1   Cryptography - Hill Cipher

1. Which of the following can be used to encipher with the Hill cipher (as we did in class mod 26)?

$$A = \begin{bmatrix} 1 & 3 \\ 1 & 2 \end{bmatrix}, B = \begin{bmatrix} 4 & 1 \\ 1 & 2 \end{bmatrix}, C = \begin{bmatrix} 25 & 5 \\ 3 & 11 \end{bmatrix} \text{ and } D = \begin{bmatrix} 1 & 3 & 3 & 0 \\ 0 & 2 & 1 & 1 \\ 0 & 3 & 1 & 0 \\ 1 & 0 & 2 & 0 \end{bmatrix}$$

2. Define the follwing matrix: $E = \begin{bmatrix} 5 & 1 \\ 3 & 6 \end{bmatrix}$

   (a) For the plaintext message "WOLFMAN", find the two letter block representation using the alphabet: $A = 00, B = 01, C = 02, D = 03, \ldots$

   (b) Use the matrix E to encipher the plaintmessage.

   (c) Find the deciphering matrix D.

   (d) Decipher the ciphertext: JBCMVPTKGD.