Precalculus A NAME_____
Worksheet 7.8

Write a cryptogram for each message below:

1. Use the matrix A to encode the message: Happy Days

$$A = \begin{bmatrix} 1 & -2 & 2 \\ -1 & 1 & 3 \\ 1 & -1 & -4 \end{bmatrix}$$

2. Use matrix A (below) to encode the message: Happy Birthday

$$A = \begin{bmatrix} 1 & 2 & 2 \\ 3 & 7 & 9 \\ -1 & -4 & -7 \end{bmatrix}$$

Decode each of the cryptograms below:

3. Use the inverse of the matrix $A = \begin{bmatrix} 1 & -2 & 2 \\ -1 & 1 & 3 \\ 1 & -1 & -4 \end{bmatrix}$ to decode the cryptogram.

21 -40 14 2 -11 32 16 -16 -66 15 -20 -31

4. Use the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & 2 \\ 3 & 7 & 9 \\ -1 & -4 & -7 \end{bmatrix}$ to decode the following cryptograms:

a) 20 17 -15 -12 -56 -104 1 -25 -65 62 143 181

b) 13 -9 -59 61 112 106 -17 -73 -131 11 24 29 65 144 172

5. Use the inverse of the matrix $A = \begin{bmatrix} 1 & -1 & 0 \\ 1 & 0 & 3 \\ -2 & 1 & -1 \end{bmatrix}$ to decode the following cryptograms:

a) -15 3 -12 27 -10 61 11 1 38 28 -20 24

b) -20 9 -9 -14 1 -13 -19 7 -12 11 4 55 18 -18 0

c) 7 -2 15 -3 1 0 -27 8 -19 2 -1 31

6. Decode the cryptogram: 129 -85 -38 -75 70 25 -9 18 3 188 -141 -58

using $A = \begin{bmatrix} 13 & -10 & -4 \\ -6 & 5 & 2 \\ 3 & -2 & -1 \end{bmatrix}$