WORKSHEET #3 – MATH 6310
FALL 2017

DUE WEDNESDAY OCTOBER 15TH

For each problem below, find a normal form of the given matrix over the given Euclidean domain.

1. The Euclidean domain is $\mathbb{Z}$. The matrix is
$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & -8 & 9 \end{bmatrix}$$

2. The Euclidean domain is $\mathbb{Q}[x]$. The matrix is
$$\begin{bmatrix} x & 0 \\ x & x^2 \\ 1 & 1 \end{bmatrix}$$

3. The Euclidean domain is $\mathbb{Z}[i]$. The matrix is
$$\begin{bmatrix} 2 & i & -1 \\ 0 & 2i & 1+i \\ i & 1 & 2 \end{bmatrix}$$