

MA511 HW28 Sol.

#5.1.4

Sol.

$$u = \begin{bmatrix} 1 \\ -1 \end{bmatrix} + 4 \begin{bmatrix} 1 \\ 1 \end{bmatrix} e^t$$

The vector $\begin{bmatrix} 1 \\ -1 \end{bmatrix}$ is in the null space, so $\lambda = 0$

#5.1.6

Sol.

$\begin{bmatrix} 1 & 1 \\ 1 & 1 \end{bmatrix}$ has eigenvalues $\lambda = 0$ and $\lambda = 2$

After subtracting row 1 from row 2,

$\begin{bmatrix} 1 & 1 \\ 0 & 0 \end{bmatrix}$ has eigenvalues $\lambda = 0$ and $\lambda = 1$.

A singular matrix remains singular.