

MA511 HW30 Sol.

#5.4.2

Sol. $u(t) = c_1 e^{-2t} x_1 + c_2 x_2;$

$$u(t) = \begin{bmatrix} e^{-2t} + 2 \\ -e^{-2t} + 2 \end{bmatrix}$$

Steady state $u(\infty) = \begin{bmatrix} 2 \\ 2 \end{bmatrix}$

#5.4.6

Sol.

$$A = \begin{bmatrix} 0 & 1 \\ -1 & 0 \end{bmatrix}$$

$$\lambda_1 = i, \lambda_2 = -i$$

$$x_1 = (-i, 1), x_2 = (i, 1)$$

$$y = 2 \cos t$$