

題一：(25%)

$$A = \begin{bmatrix} 2 & 1 \\ 3 & 4 \end{bmatrix} \quad \text{Please find } A^{20} = ?$$

題二：(25%)

Find the general solution to the following O.D.E.

$$(x^2 - 1)x^2 \frac{d^2 y}{dx^2} - (x^2 + 1)x \frac{dy}{dx} + (x^2 + 1)y = 0$$

題三：(15%)

Determine the function of time, $x(t)$, for the following Laplace transform and the associated regions of convergence.

$$\frac{s+1}{(s+1)^2 + 9}, \quad \text{Re}\{s\} < -1$$

題四：(35%)

Determine Fourier transform of $x(t)$

(a) (15%) $x(t) = 1$

(b) (20%) $[e^{-at} \cos \omega_0 t] u(t), a > 0$

試題隨卷繳回