義守大學九十二學年度轉學生入學招生考試
『工程數學』參考試題

1. Solve the ordinary differential equation (20%)

   $y'' + y = x\cos x$

2. Solve the differential equation (20%)

   $x^2 y'' + 3xy' + y = 0, \quad x > 0$

3. Find the general solution of the differential equation (20%)

   $y^2 + \left(x^2 - xy\right)y' = 0$

4. Solve the initial value problem for $y(t)$ (20%)

   $y'' + 2ty' - 4y = 1 \quad y(0) = y'(0) = 0$

5. Expand $f(t)$ as d Fourier series. $f(t)$ is a periodic function with period 2,

   $f(t) = \pi t, -1 < t < 1$. (20%)