

臺灣綜合大學系統 105 學年度學士班轉學生聯合招生考試試題

科目名稱	工程數學	類組代碼	D04
		科目碼	D0491
※本項考試依簡章規定各考科均「不可以」使用計算機		本試題共計 1 頁	
<p>1. (10%) Solve the first-order differential equation $y' = x - 2y$.</p> <p>2. (15%) Find the general solution of the second-order differential equation $y'' + 2y' + y = x$.</p> <p>3. (20%) Solve the system of differential equations $\begin{bmatrix} y_1' \\ y_2' \end{bmatrix} = \begin{bmatrix} y_1 + y_2 \\ y_1 - y_2 \end{bmatrix}, y_1(0) = 1, y_2(0) = 1$.</p> <p>4. (10%) Compute the determinant of $A = \begin{bmatrix} 1 & 2 & 1 \\ 1 & 1 & 2 \\ 2 & 3 & 1 \end{bmatrix}$.</p> <p>5. (10%) Compute the inverse of $A = \begin{bmatrix} 1 & 2 & 1 \\ 2 & 1 & 2 \\ 2 & 3 & 1 \end{bmatrix}$.</p> <p>6. (20%) Compute the area of surface $S: x^2 + y^2 = z, 1 \leq z \leq 2$.</p> <p>7. (15%) Find the Fourier series of the function $f(x) = x, -1 \leq x \leq 1$, of period $p=2$.</p>			