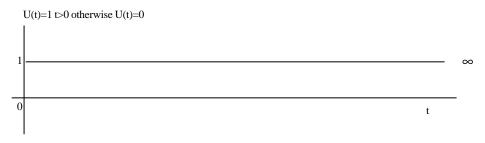
海大河工系工數二(B)第三次大考(拉氏轉換)

- 1. Solve the complementary solutions of y''=0 using Laplace transform. (5%) Solve the solutions of y'''-3y''+3y'-y=0 using Laplace transform (5%)
- 2. Solve the total solution of $y''+y = \sin(t)$ subject to y(0) = 0 and y'(0) = 0 using Laplace transform (10%)
- 3. Find the Laplace transform of e^t , $\cosh(t)$, $\cos(t)$ and d(t). (10%)
- 4. Take Laplace transform of $t^2y''-2ty'-10y=0$. (5%)
- 5. Take Laplace transform of $t^2y''+6ty'-6y=0$. (5%)
- 6. Solve the solution of $y'+y = \sin(t) + \cos(t)$ subject to y(0)=0. (10%)
- 7. What is convolution? (5%)
- 8. Plot a(t)=U(t)-U(t-1) and b(t)=U(t-1)-U(t-2) where U(t) is shown below. (10%)
- 9. Find the convolution of a(t) and b(t), c(t)=a(t)*b(t) (15%)
- 10. Find the Laplace transform of U(t) (2%) and c(t). (8%)
- 11. Please write the initial value theorem and final value theorem. (10%)
- 12. If the Laplace transform of $1/\sqrt{t}$ is P(s), find the Laplace transform of \sqrt{t} in terms
 - of P(s). (10%)

(Hint: two choices: differential operator and multiplying by t)



【日期: 2003/Dec.22 18:00-20:00 冬至夜 檔名: Math1-Midexam3.doc/JTCHEN 製表】