(8) 1. Find the Laplace transform of $H(t-5)\left(t^2+4t+e^{6t}\right)$.

(16) 2. a) Use Laplace transforms to solve the initial value problem $y''-y=\delta(t-3)$ with $\begin{cases} y(0)=-1 \\ y'(0)=1 \end{cases}$.

b) Write formulas *without* Heaviside functions for $y(t)$ in the indicated intervals:

If $0<t<3$ then $y(t)=$ _____ .

If $3<t$ then $y(t)=$ _____ .

c) Check that your answer satisfies the initial conditions.

$y(0)=$ _____ .

For t near 0, $y'(t)=$ _____ so that $y'(0)=$ _____ .

d) Is your solution continuous at $t=3$?

Problems for extra credit on the first exam in Math 421, section 2

May 11, 2004

NAME _____

Do all problems, in any order.
Show your work. An answer alone may not receive full credit.
No notes other than the distributed formula sheet may be used on this exam.
No calculators may be used on this exam.

Problem Number	Possible Points	Points Earned:
1	8	
2	16	
Total Points Earned:		