EE341.01 **PS3** **DUE 09/18/98**

1. Problem 1.13a,b,c

2. Determine if the following continuous-time systems are causal or noncausal, linear or nonlinear, and time-invariant or time varying. Note that x(t) and y(t) are the system's input and output, respectively.

System Equation	Causal/ Noncausal	Linear/ Nonlinear	Time-Invariant/ Time Varying
$y(t) = tx(t)$			
$y(t) = 2x(t) + 3$			
$y(t) = t^2 x(t-1)$			
$y(t) = x(t+2) - x(t-3)$			
$\frac{dy(t)}{dt} + ty(t) = x(t)$			
$\frac{dy(t)}{dt} + 10y(t) + 5 = x(t)$			
$\frac{d^2y(t)}{dt^2} + 2\frac{dy(t)}{dt} + y^2(t) = x(t)$			
$\frac{d^2y(t)}{dt^2} + 2\frac{dy(t)}{dt} + y(t) = x(t)$			
$\frac{d^2y(t)}{dt^2} + \frac{2}{t}\frac{dy(t)}{dt} + y(t) = x(t)$			
$y(t) = \begin{cases} 2, & t \geq 1 \\ 0, & t < 1 \end{cases} \quad \forall x(t)$			

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