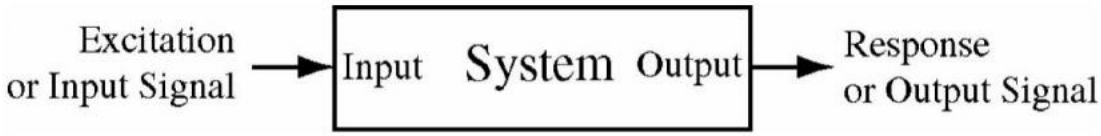
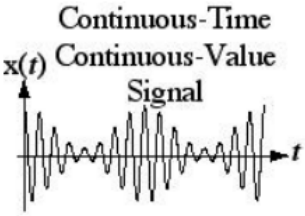
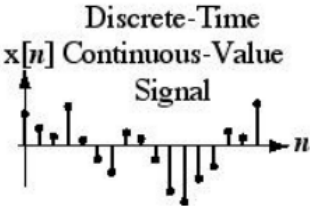
1. Sinyal, sistem, uyartılmış sinyal ve bir sistem modelini çizip tanımlayın. Sf. 2

Sinyal : Bilgi taşıyan herhangi bir fiziksel fenomendir.
Sistem : Sinyallere tepki verir ve yeni sinyaller üretir.
Uyartım sinyalleri : Sistem **giriş**lerinde uygulanır ve yanıt sinyalleri sistem **çıkış**larında üretilir.



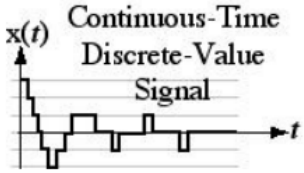
2. Sinyaller verilip sinyal tipleri belirleme sorulacak. Sf. 4

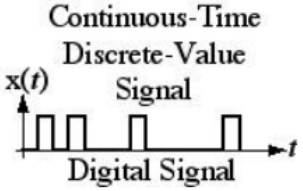


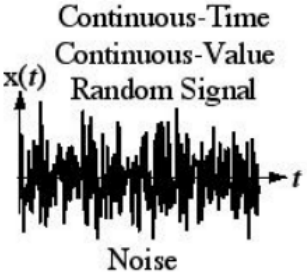


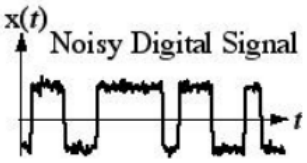
Continuous-Time=Sürekli Zaman | Continuous-Value=Sürekli Değer | Discrete–Time= Ayrık Zaman

Discrete–Value = Ayrık Değer | Random Signal = Rasgele Sinyal | Noisy = Gürültülü

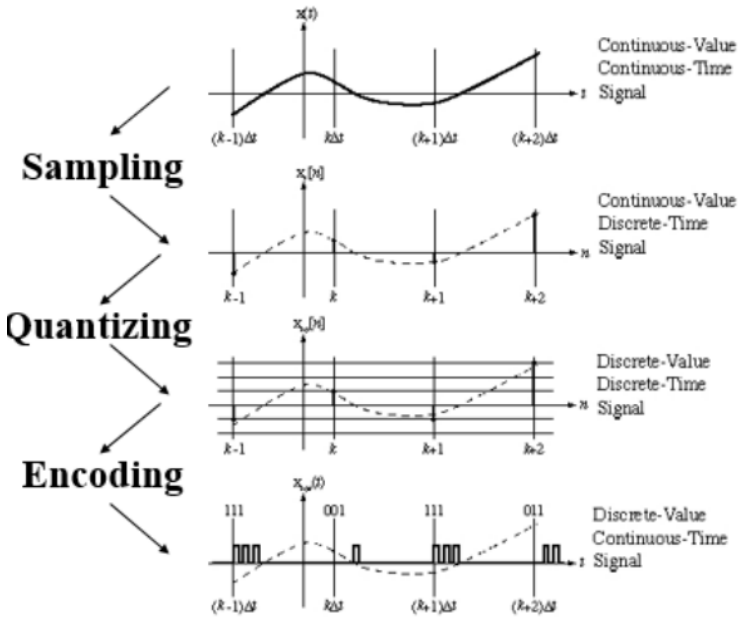




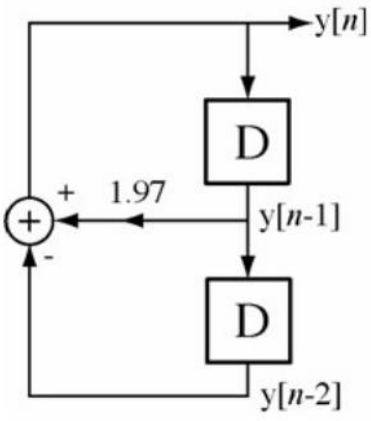




3. Örnekleme, kuantalama, kodlama Sf.5'deki sinyal grafiklerini çalışın, çizin.



4. y[n]=1.97y[n-1]-[n-2] blok diyagramını çizimine ve ayrık sistem tanımına çalışın benzeri sorulacak



Discrete-time systems can be described by **difference** (not differential) equations. Let a discrete-time system generate an excitation signal y[n] where n is the number of discrete-time intervals that have elapsed since some beginning time $n = 0$. Then, for example a simple discrete-time system might be described by

$$y[n] = 1.97\,y[n-1] - y[n-2]$$

("D" means delay one unit in discrete time.)

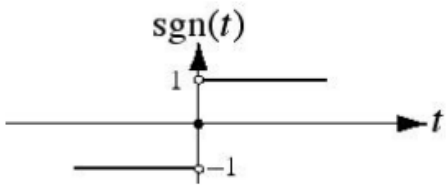
2. Chapter2.pdf

5. Signum, Unit Step Impuls Rampa fonksiyonlarını eşitliklerini yazıp, grafiklerini çizin.

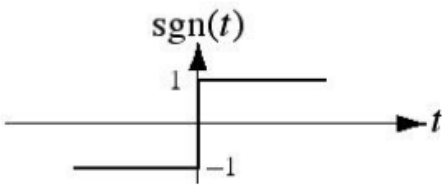
The Signum Function

$$\operatorname{sgn}(t) = \begin{cases} 1 & , \ t > 0 \\ 0 & , \ t = 0 \\ -1 & , \ t < 0 \end{cases}$$

Hassas Grafik

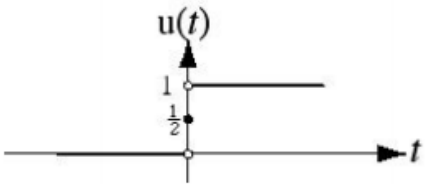


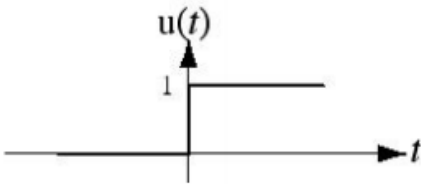
Yaygın Kullanılan Grafik



The Unit Step Function

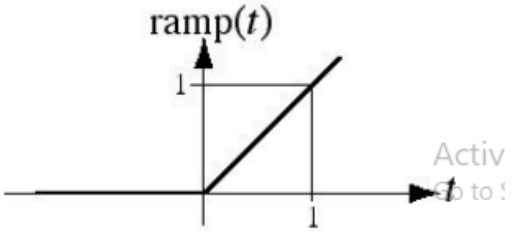
$$u(t) = \begin{cases} 1 & , \ t > 0 \\ 1/2 & , \ t = 0 \\ 0 & , \ t < 0 \end{cases}$$



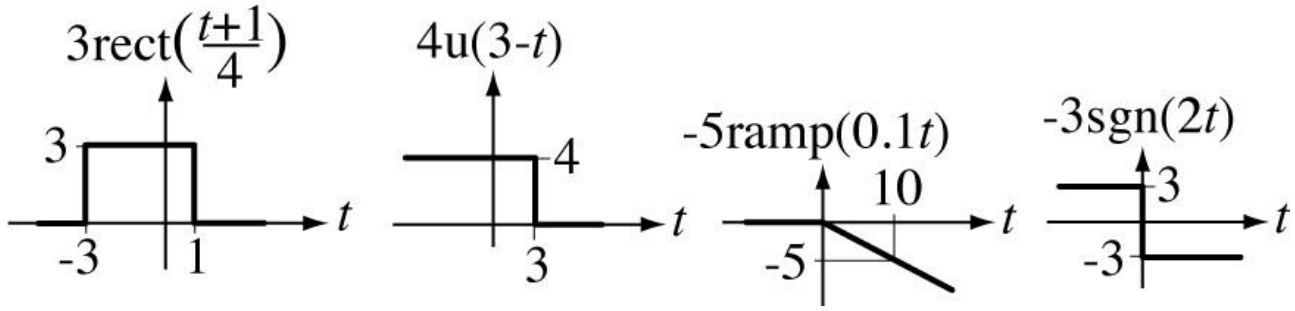


The Unit Ramp Function

$$\text{ramp}(t) = \begin{cases} t & , \ t > 0 \\ 0 & , \ t \le 0 \end{cases} = \int_{-\infty}^{t} u(\lambda)\,d\lambda = t\,u(t)$$



6. Sf. 5 Kaydırma ve Skalalama Fonksiyonlarını dikdörtgen dalga üstünden çalışın benzeri sorulacak. 3 rect(t+1/4)...



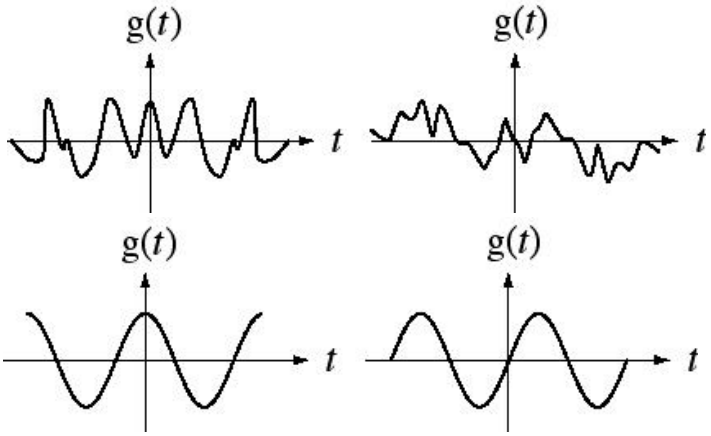
7. Sf.7 Verilen fonksiyonun hangilerinin çift ya da tek olduğunu yazın. Örneklere çalışın benzeri sorulacak.

Even Functions

$$g(t) = g(-t)$$

Odd Functions

$$g(t) = -g(-t)$$



8. Bir sinyalin enerji formülünü yazın. Sf.9

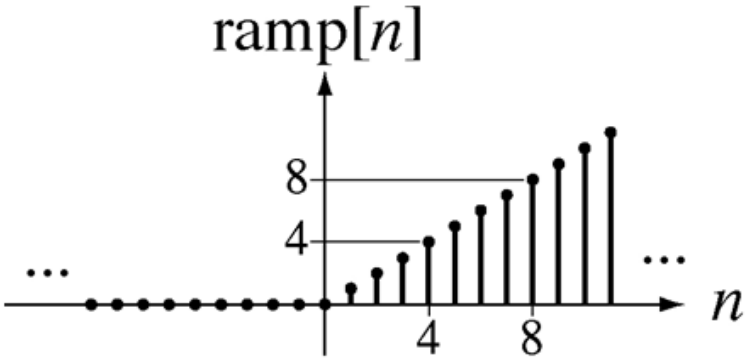
The signal energy of a signal $x(t)$ is

$$E_x = \int_{-\infty}^{\infty} |x(t)|^2 \, dt$$

3. Chapter 3.pdf

9. Unit Rampa Funksiyonunu (Unit Ramp Function) matematiksel ifadesini yazıp grafiksel olarak gösteriniz.

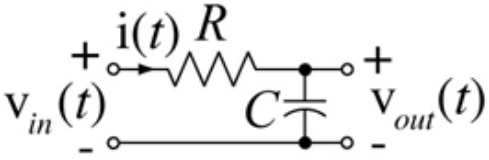
$$\text{ramp}[n] = \begin{cases} n & , \ n \geq 0 \\ 0 & , \ n < 0 \end{cases} = n\,\text{u}[n] = \sum_{m=-\infty}^{n} \text{u}[m-1]$$

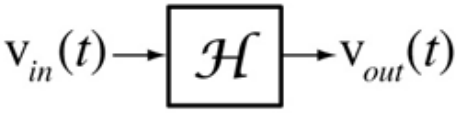


4. Chapter 4.pdf

10. Bir RC Filtresinin Sıfır-Durum Cevabını (t=0) Zero-State Response verilen Vi ve Vo giriş çıkış sinyallaerine göre çizip açıklayınız.

An *RC* **lowpass filter** is a simple electrical system. It is excited by a voltage $v_{in}(t)$ and responds with a voltage $v_{out}(t)$. It can be viewed or modeled as a single-input, single-output system





11. Time-Invariance (Zamanda Değişmezlik) nedir? Verilen sistemin Time-Invariant olup olmadığını belirleyin sf. 16'daki örnek benzeri sorulacak. Sf. 16

- If an excitation causes a zero-state response and delaying the excitation simply delays the zero-state response by the same amount of time, regardless of the amount of delay, the system is **time invariant**.

Time Invariant System