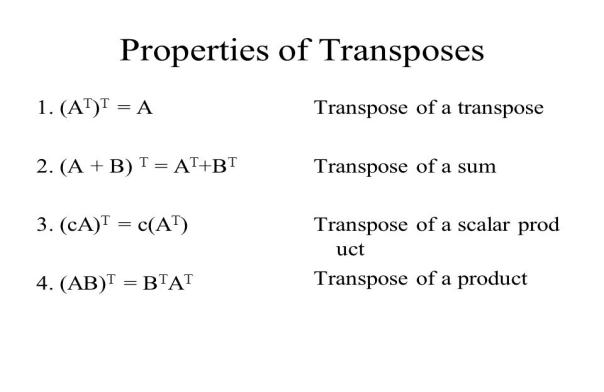
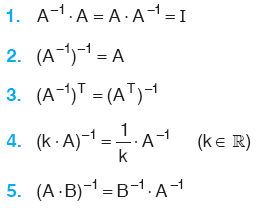
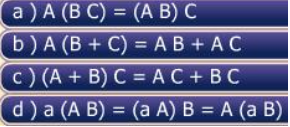
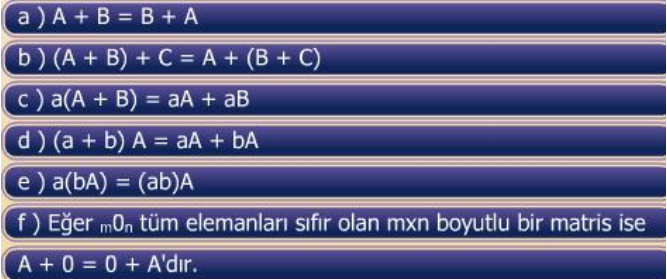
**:LiNEER CEBiR:**

**Ders01 - Lineer Eşitlikler**

**Matrisler:**



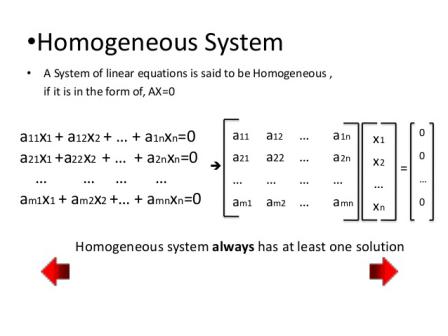


**Skew Symmetric:**

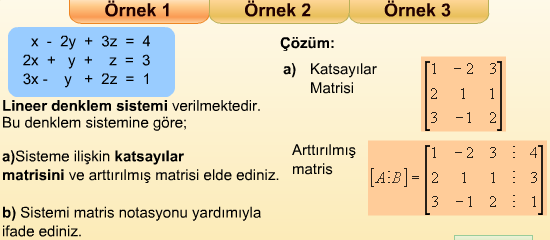


**Homogeneous System:**

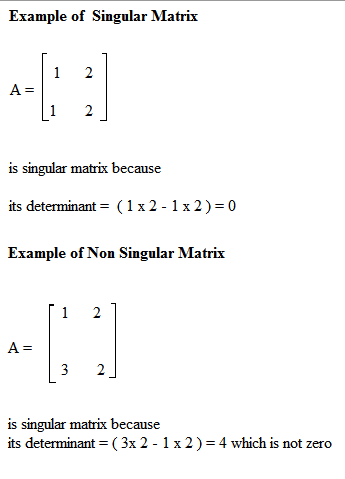
Ax = 0 ise sistem homojendir.



**Arttırılmış (Augmented) Matris ve Coefficient (Katsayı) Matrisi:**



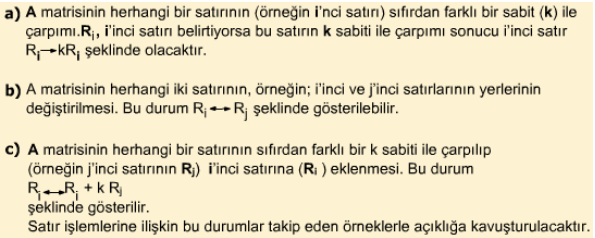
**NonSingular Or Singular Matrix:**

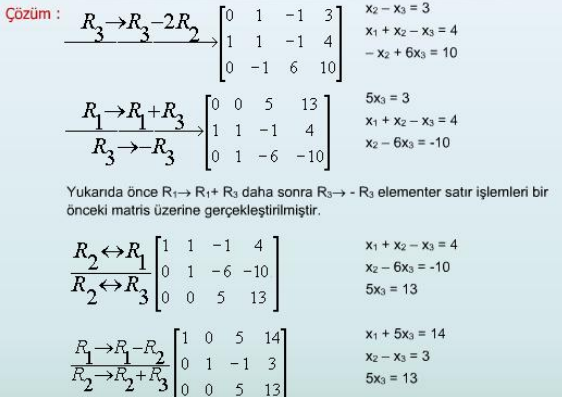
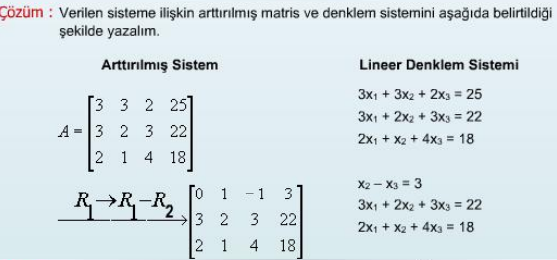
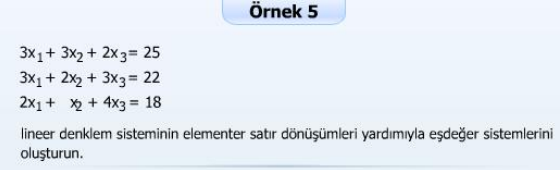




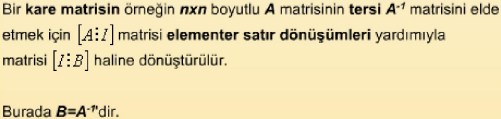
**Ders02 - Lineer Sistem Çözümü**

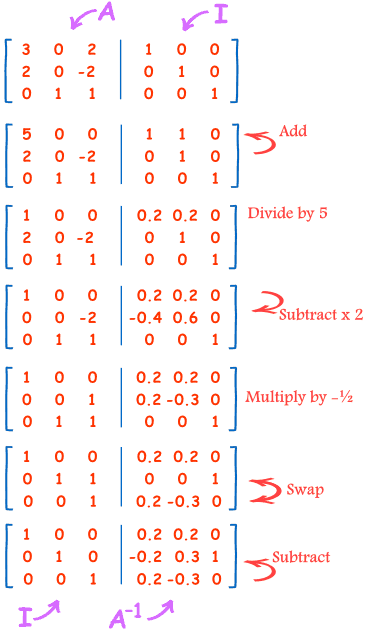
**Row Echelon Form (Satır Eşdeğer Matris):**

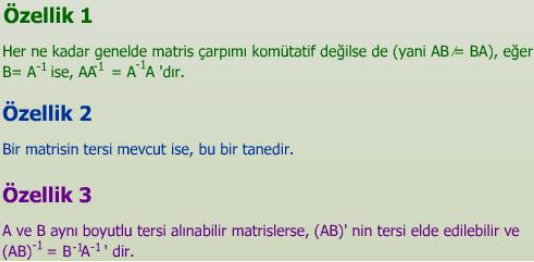




**Elementer Matris Yardımı İle Tersini Bulma:**

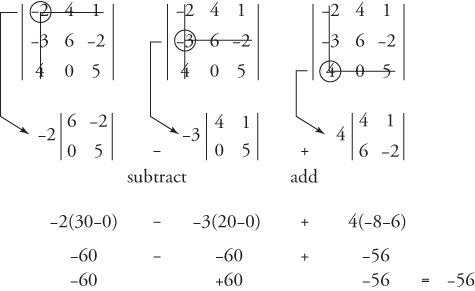






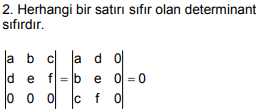
**Ders03 - Determinant**

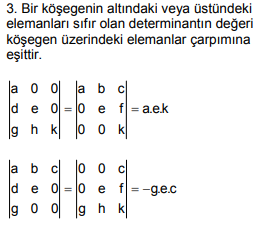
**Determinantın Tanımı:**

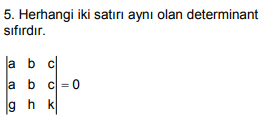


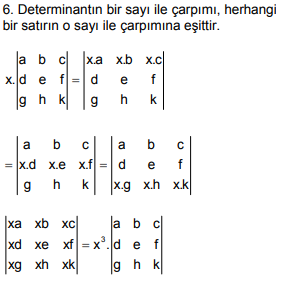
**Determinantın Özellikleri:**

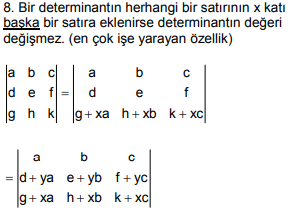
1

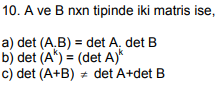


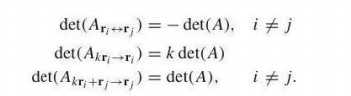










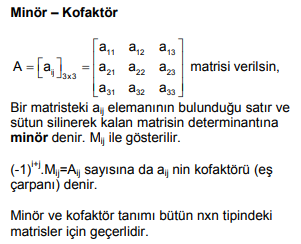


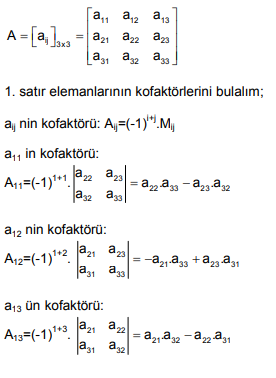






**Minör - Kofaktör:**



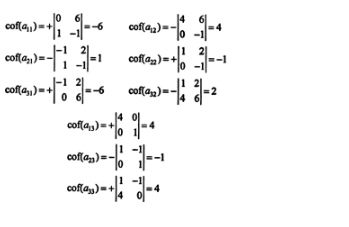


**Matrix Adjoint:**

Bir matrisin adjoint’i o matrisin kofaktörlerinin bir matris oluşturması sonucu o matrisin tranpozunun alınması ile oluşur.

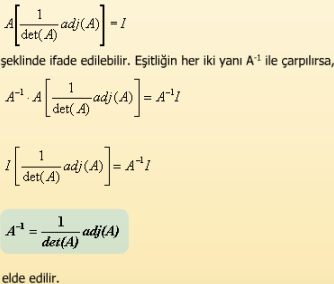
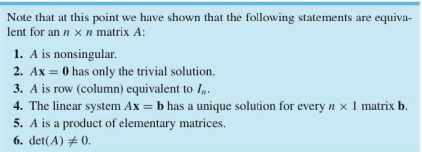
Örneğin;





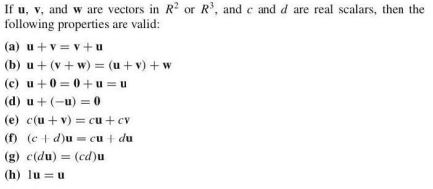
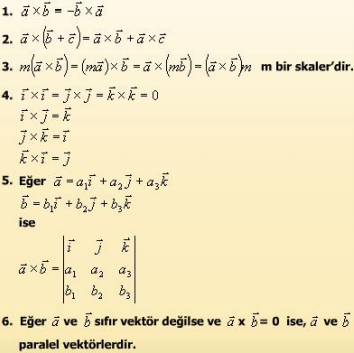
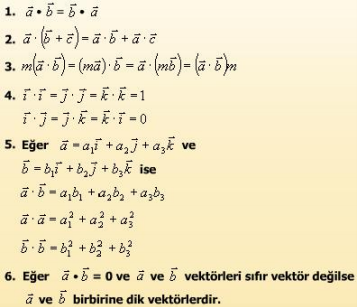


!!! Bir matris ile o matrisin Adjoint’inin çarpımı Birim matrisin determinant ile çarpımına eşittir.

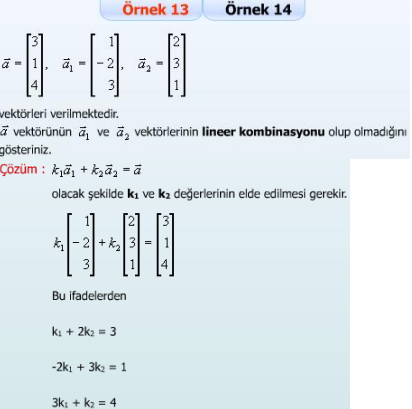
 

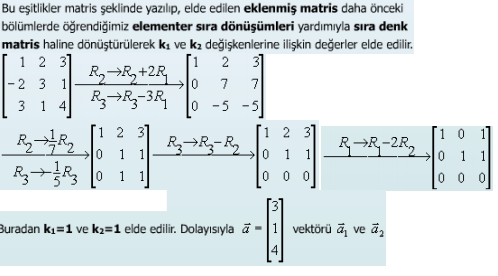
**Ders04 - Real Vector Space**

**SKALER ÇARPIM:**  **VEKTÖREL ÇARPIM:**



**Lineer Kombinasyon:**



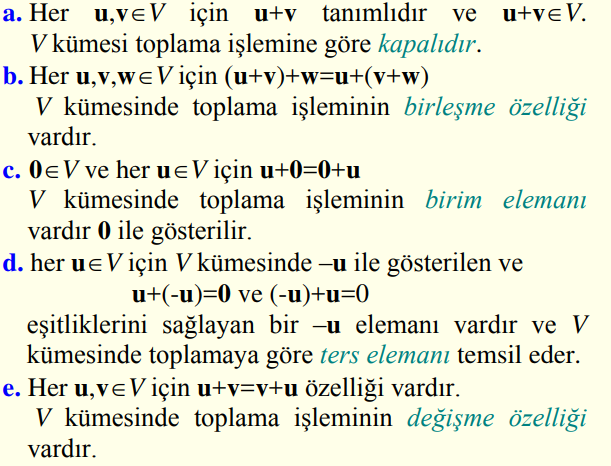


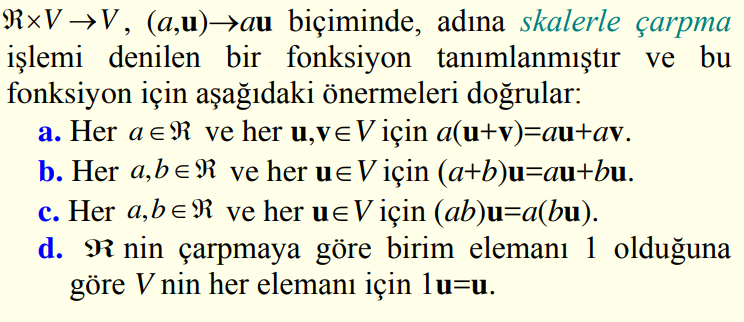
3

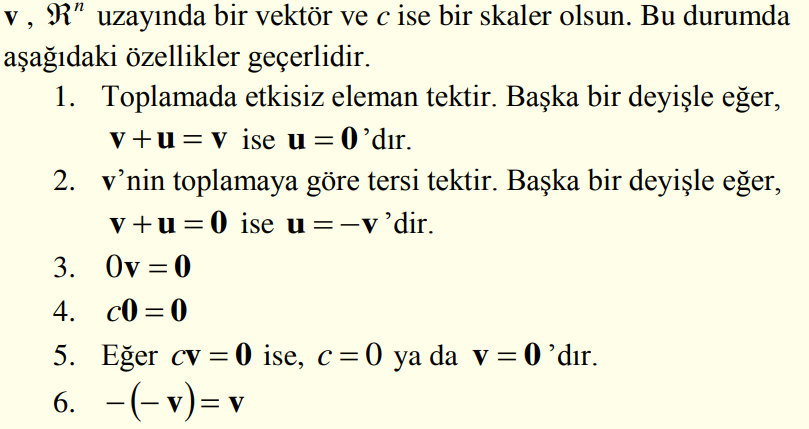
**Vektör Uzayı:**



**Vektör Uzayı Özellikler:**

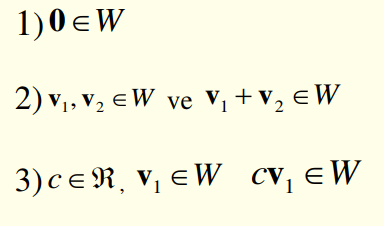




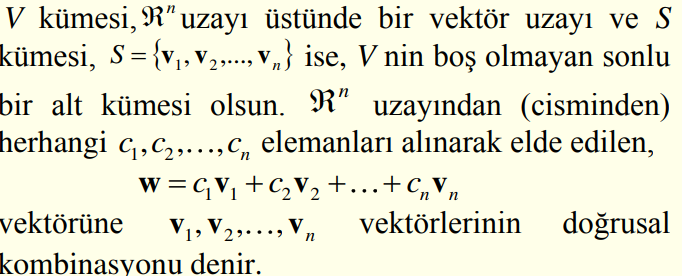


**Alt Vektör Uzayı:**

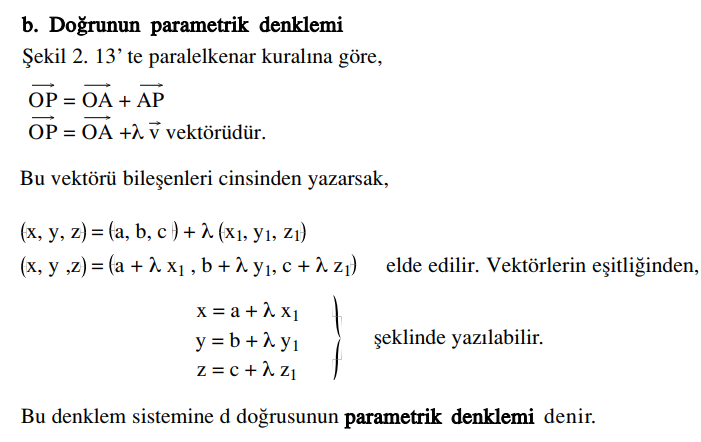
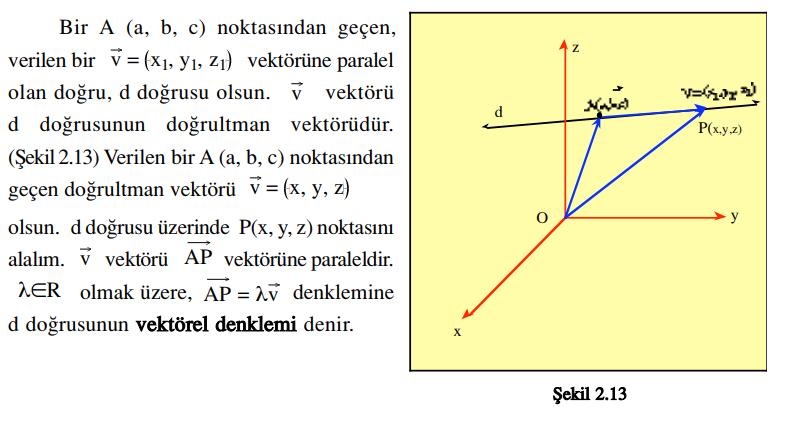
V vektör uzayının boş olmayan bir altkümesi olan W, V’de tanımlı toplama ve skalerle çarpma operatörleri altında bir vektör uzayı olduğunda V’nin alt uzayı olur.



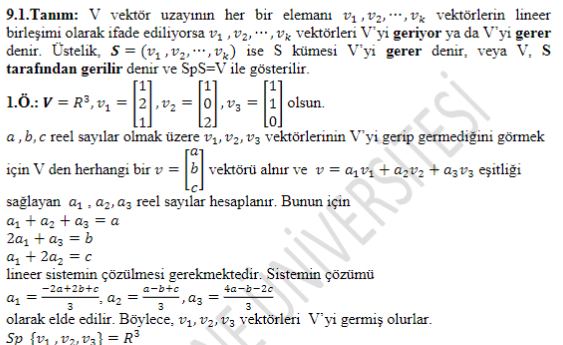
**Doğrusal Kombinasyon (Linear Combination):**



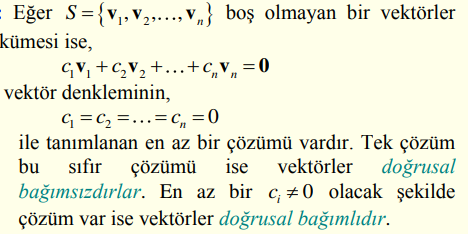
**Uzayda Doğrular:**

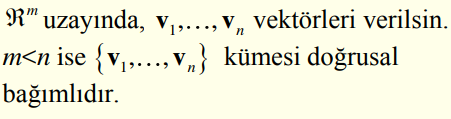
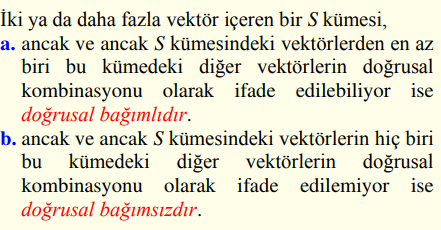


**Span (Germe):**



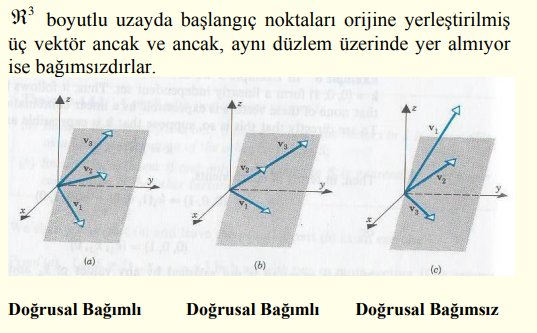
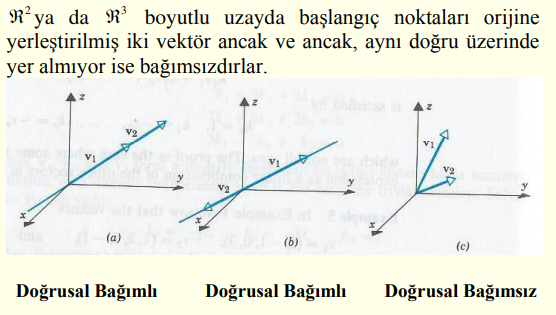
**Lineer Bağımsızlık (Linear Independence):**



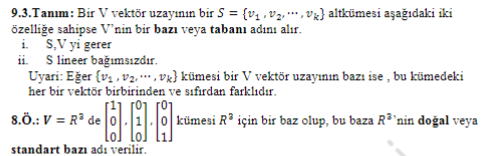


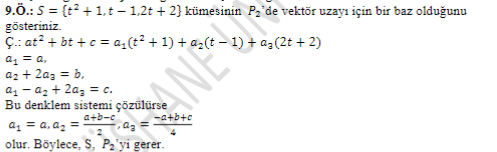


**Lineer Bağımsızlığın Geometrik Yorumu:**



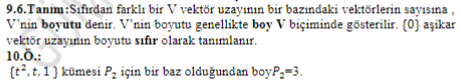
**Baz / Taban (Basis):**

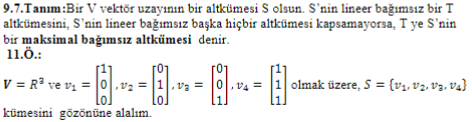




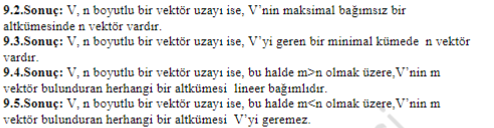


**Boyut (Dimension):**



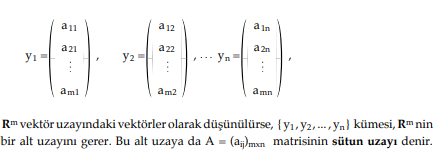
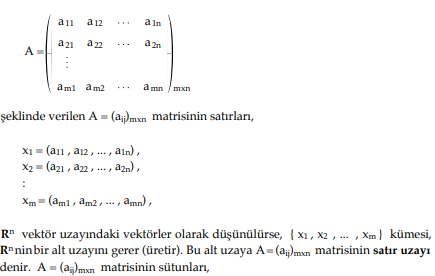






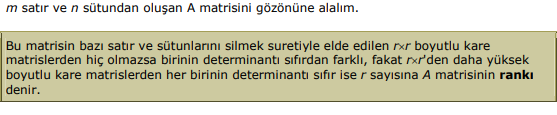


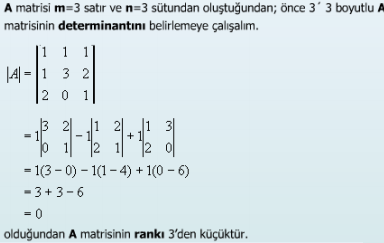
**Satır ve Sütun Uzayı:**

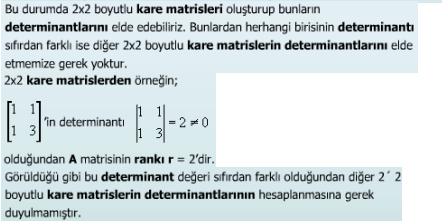


**Rank:**

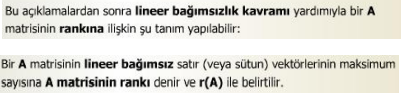
**Determinant Yardımıyla:**







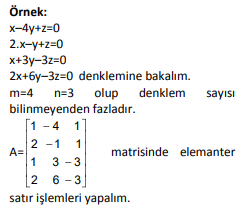
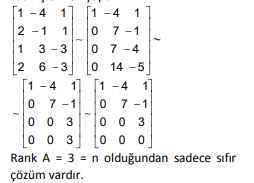
**Lineer Bağımsızlık Yardımıyla:**



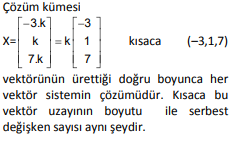
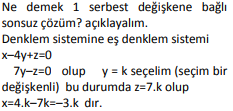
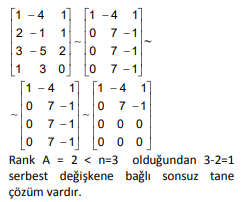
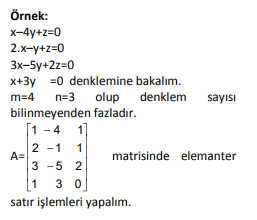
**Homojen Sistem:**

 denklem sistemine Homojen lineer denklem sistemi denir;

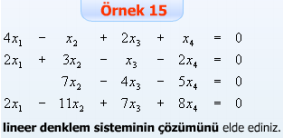
I. m>n (denklem sayısı bilinmeyen sayısından fazla ise) ve rankA = n ise sistemin sadece sıfır (aşikar da denir) çözümü vardır.

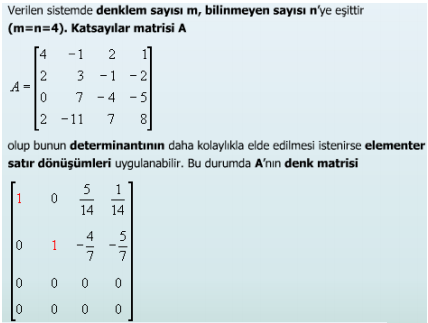
  

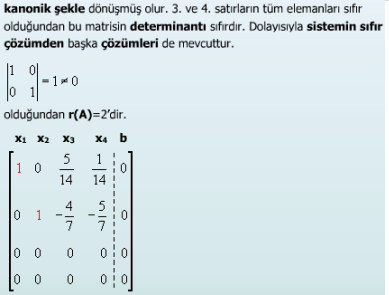
II. m>n (denklem sayısı bilinmeyen sayısından fazla ise) ve rankA = r < n ise sistemin sıfırdan farklı ve n–r tane serbest değişkene bağlı çözüm vardır.

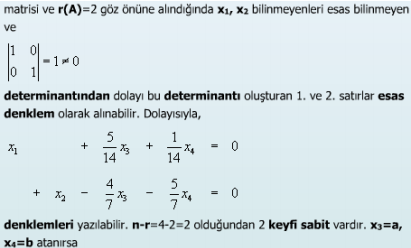


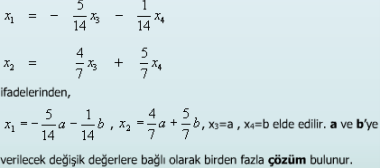
III. m=n (denklem sayısı bilinmeyen sayısına eşit ise), sıfır çözümden başka bir çözümün mevcut olma şartı katsayılar determinantının sıfır olmasıdır.



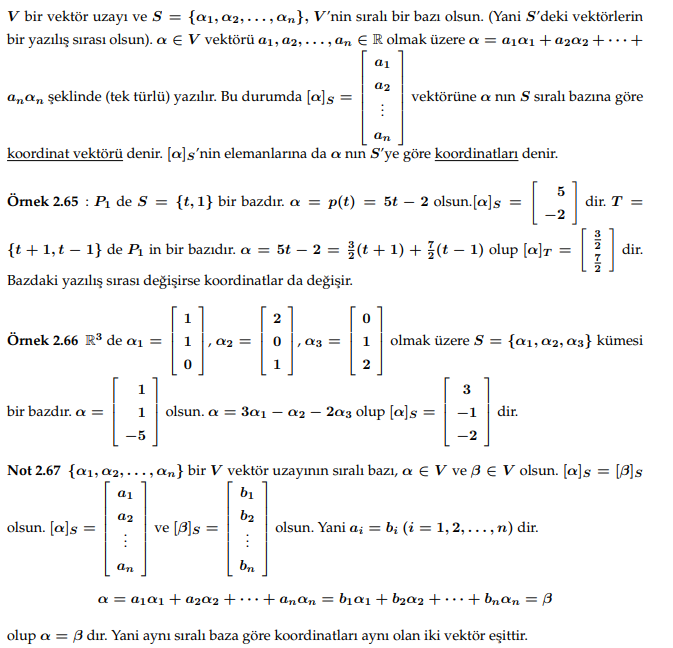




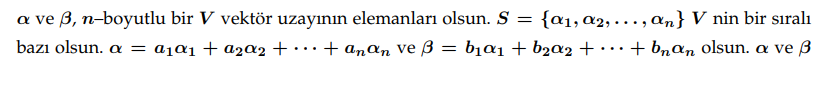


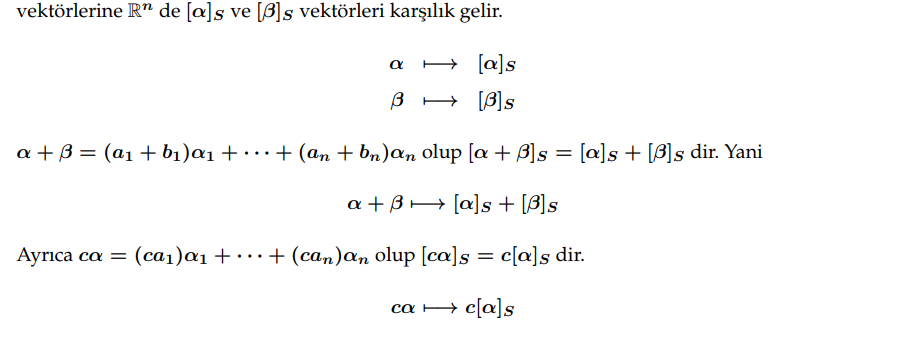


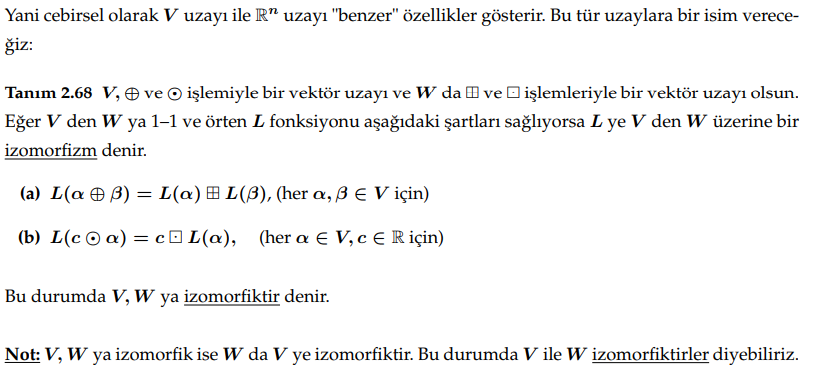
**Koordinatlar:**

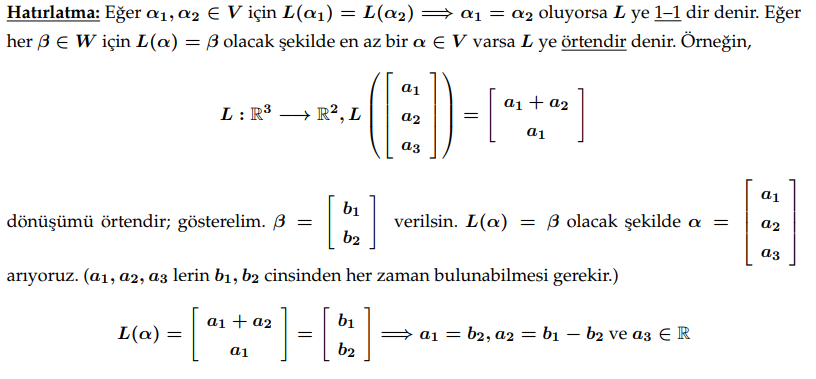


**İzomorfizm:**

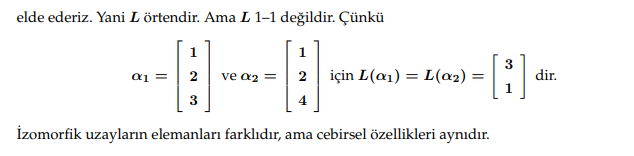




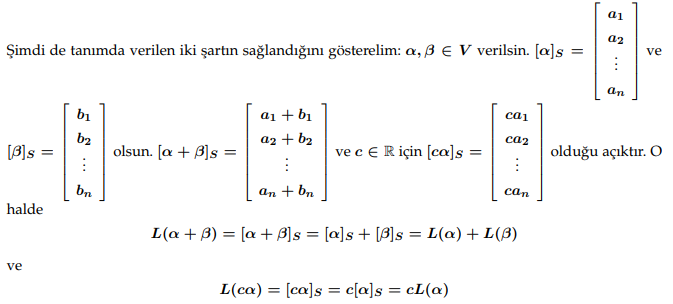


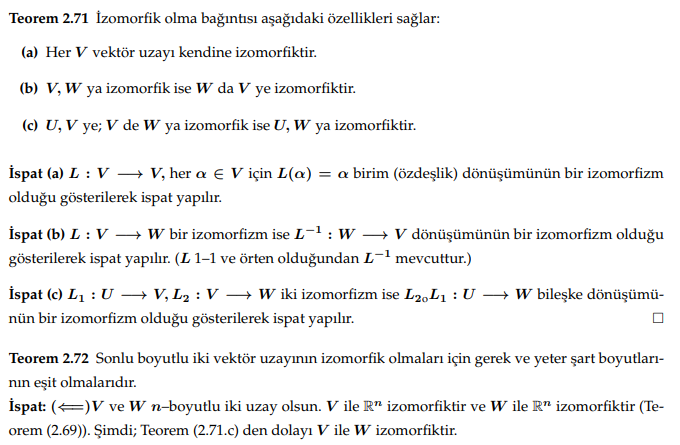


**İzomorfizm Devam...:**

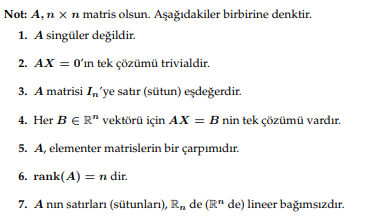




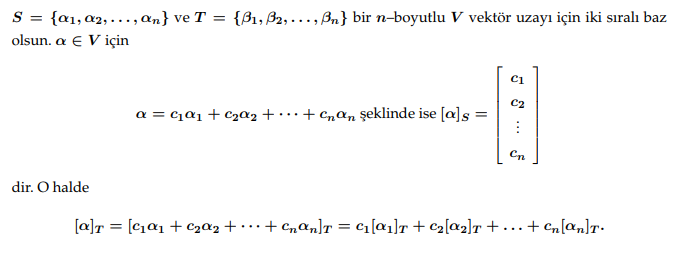


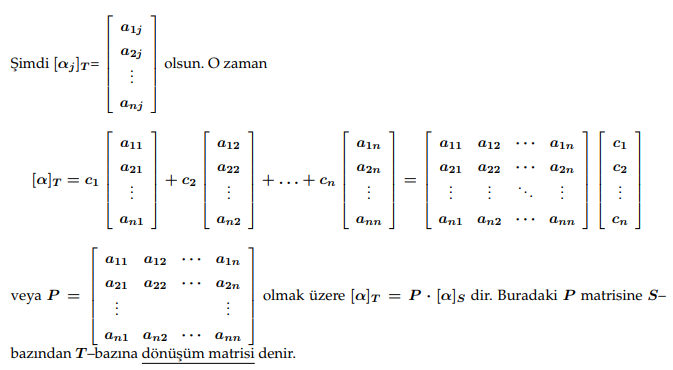


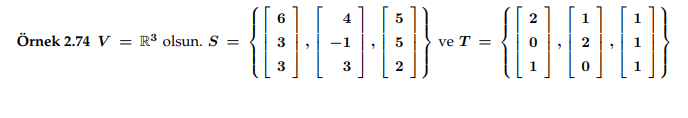
**Rank Son:**

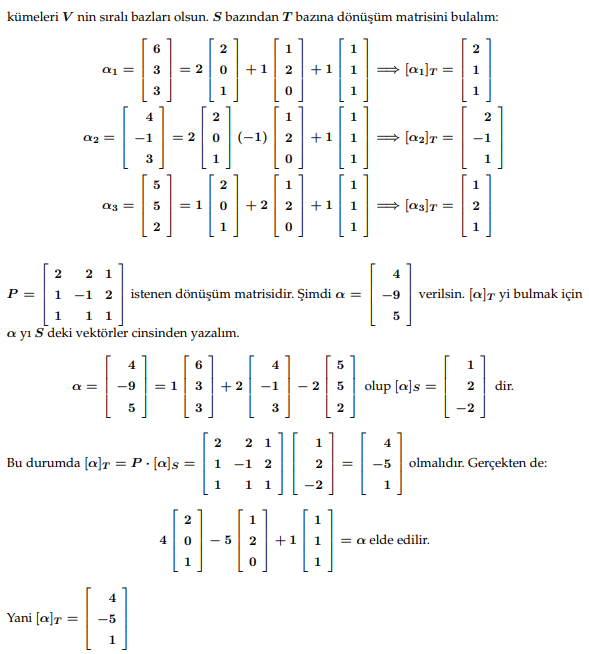


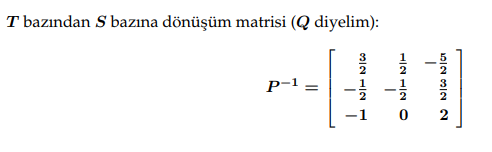
**Dönüşüm Matrisleri (Transition Matrices):**

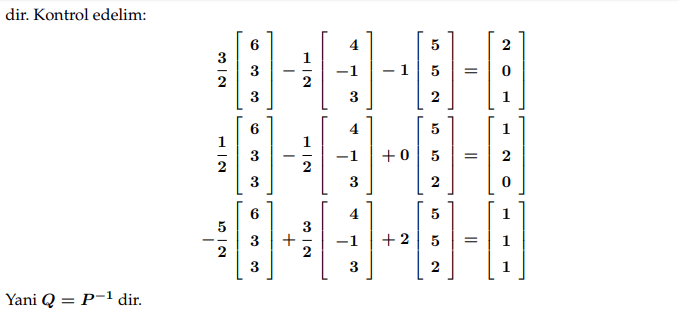






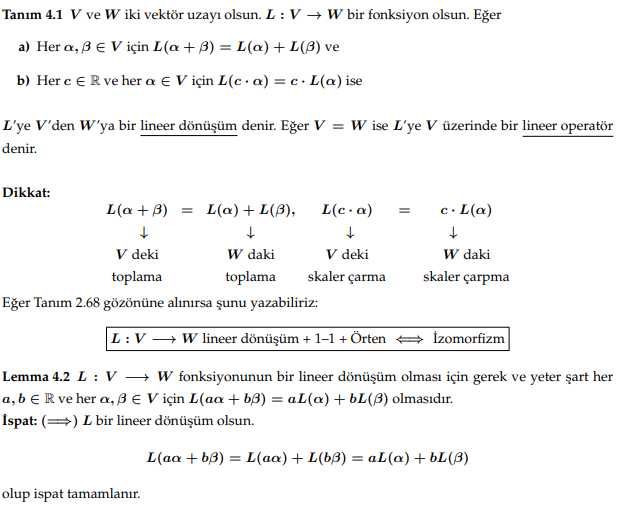


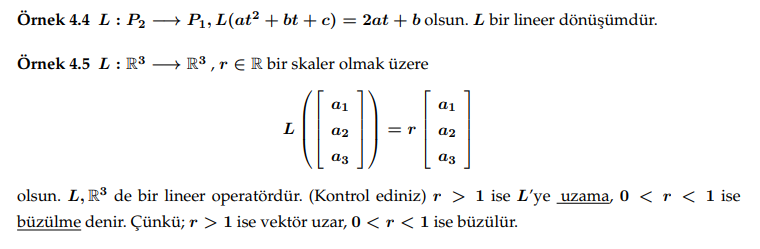


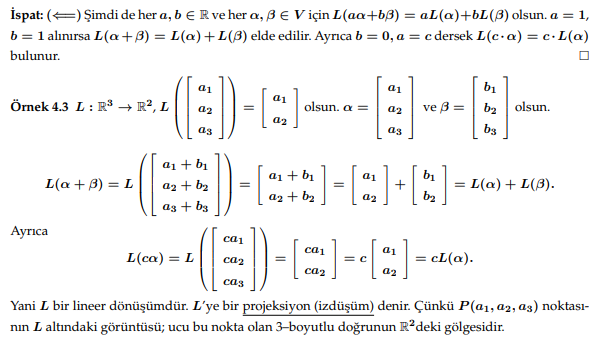


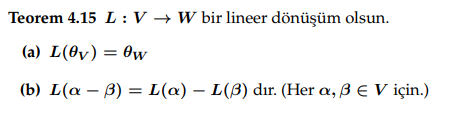
**Ders05 - Lineer Dönüşümler ve Matrisler**

**Tanım ve Örnekler:**

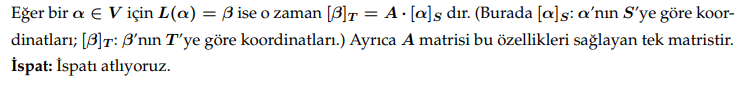
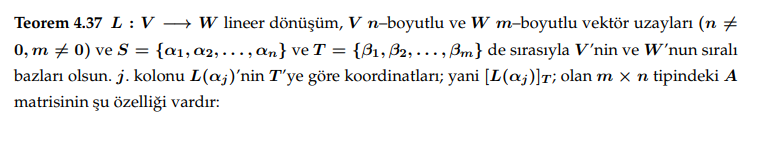


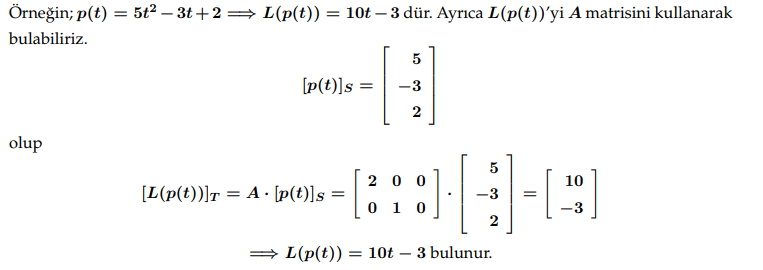
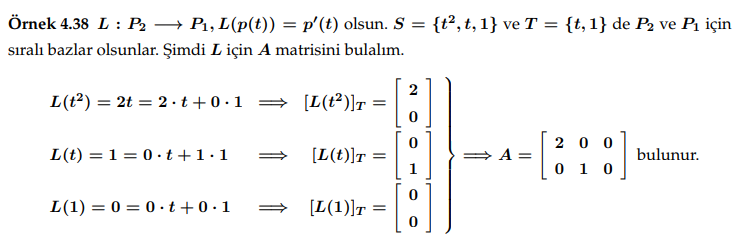


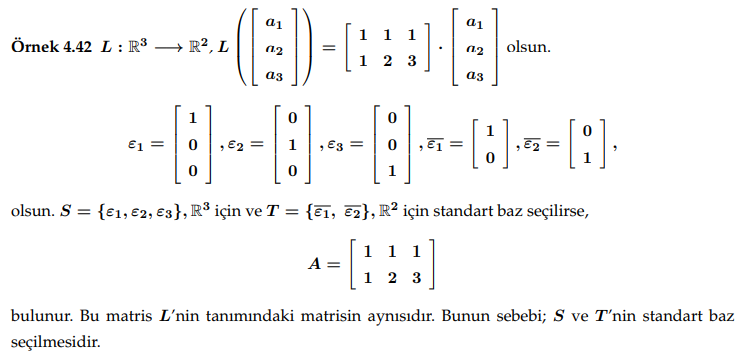




**Lineer Dönüşümün Matrisi (Linear Transformation):**







**Similarity: (Aranan Kaynak Bulunamadı, Kitaptan Devam Saife 407)**

**Ders06 - Özdeğer ve Özvektör (Eigenvalue & Eigenvector)**

**Tanım:**

A, nxn boyutlu bir kare matris ve X de n bileşenli bir vektör olsun. Bu durumda, Y = A.X çarpımı n boyutlu uzaydan kendi içerisine lineer bir dönüşüm olarak göz önüne alınabilir.

AX = **λ**X olacak şekilde **λ** skalerleri ve farklı X vektörlerini bulma problemi, eigen-eigen vektör (özdeğer-özvektör) problemi olarak bilinmektedir.

