Section 4.6

Return to idea of coordinates. Recall that once we have basis for vector space, B={b,...bi} we can write any vector as linear embinetion of there basis vectors.

x = 5, 5, + ... 5, b,

(outfrerents (,... in are coordinates of x)

with respect to basis 3.

[=] = [:] L

What if we have coordinates in one basis B

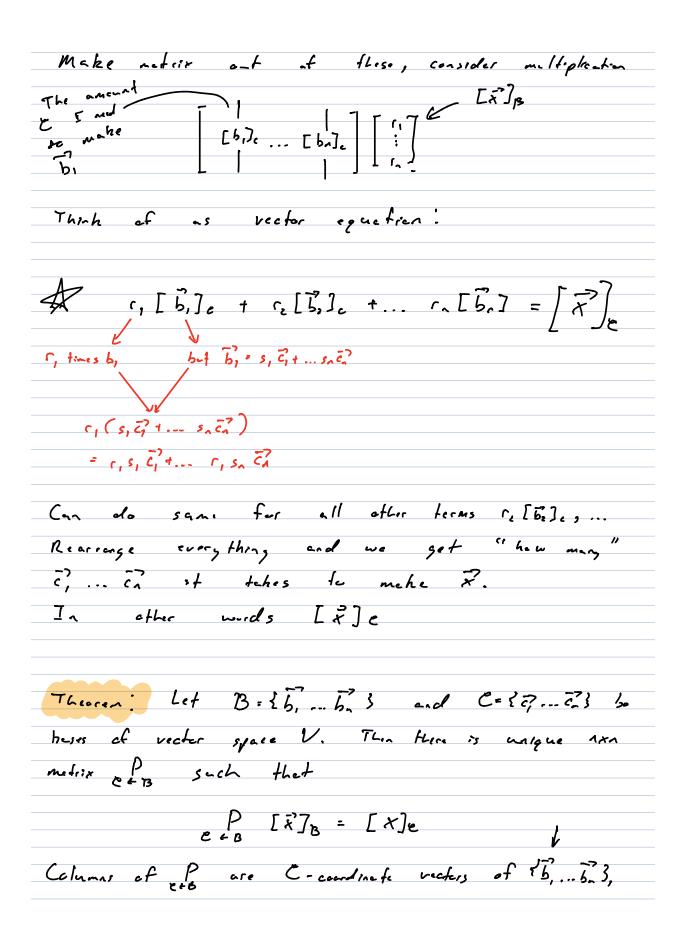
but need to convert to another basis C?

 $B = \{ \vec{b}_1 \dots \vec{b}_n \} \qquad (= \{ \vec{c}_1 \dots \vec{c}_n \}$

Start with x written in Lorms of B, [x]

[x]=[:] = [:] x= 1, b, + 1, b, + ... 1, b,

Lets say we know how to write each bi in terms of 20? . - con 3 as well [B,]e, [B,]e ... [B,]e



1.e. I 5,]e, ... [6.]e

cas the change-of-econdinates matrix from B to C

cr change-of-basis matrix

If we can change basis in one direction can just as easily change back in other direction and undo our work. So no surprise that

(cos) -1 - Brc

[x]_B = P P [x]_B

 $\begin{pmatrix} P \\ C & B \end{pmatrix}$ = $\begin{pmatrix} P \\ B & C \end{pmatrix}$