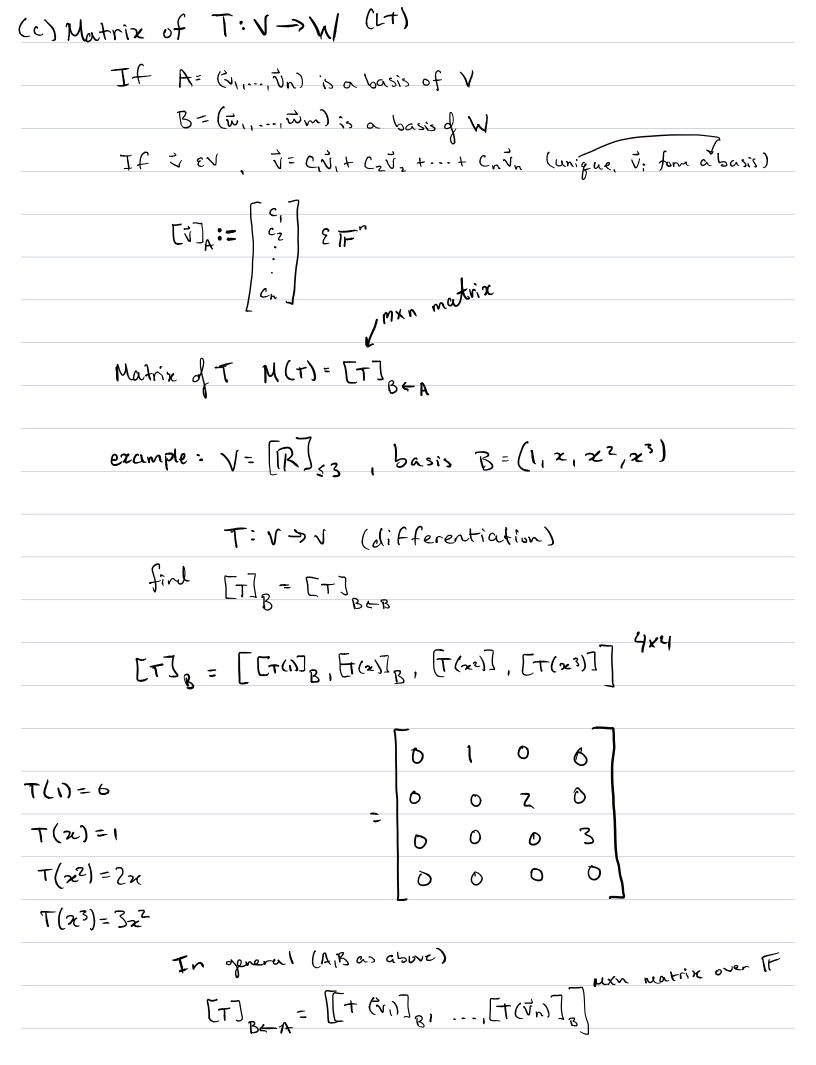
Recap
(a) Linear maps/transformations vector space
T: V→W TEL(V,W)
exampres: differentiation, projections, rotations,
if A is on man matrix over IF (LA) TMPORTAL
If A is on man matrix over IF (LA) IMPORTAN
$ \begin{array}{c} $
Key Facts
· If (V,,, Vn) is a basis of V and (w,,, w,) are ANY
elements of w, than I! T:V>> w s.t. T(vi)=wi) (2T)
(b) Kernel + Images T: V >> W
Ker T (nullspace) ⊆ V (all vectors in V s.t. T(\$1=0)
im T (range/image) & W
key facts: · ker t = v is a subspace =) a vector space
im T = W is a subspace = is a vector space
· dim V = dim ker T + dim im T



Key Properties

()
$$[T(\vec{v})]_{g} = [\tau]_{g \in A} [\vec{v}]_{A}$$
 $\tau: v \to w$

(2) If also $S: w \to u$, $c = (u_1, ..., u_p)$ basis of u
 $ST: v \to u$
 $[ST]_{c \leftarrow A} = [S]_{c \leftarrow B} [+]_{B \leftarrow A}$

· If dim V=n <∞
then T: V >> V is an isomorphism => T is injective
→ T is surjective
S:V=V(LT) S.Y. ST= IV