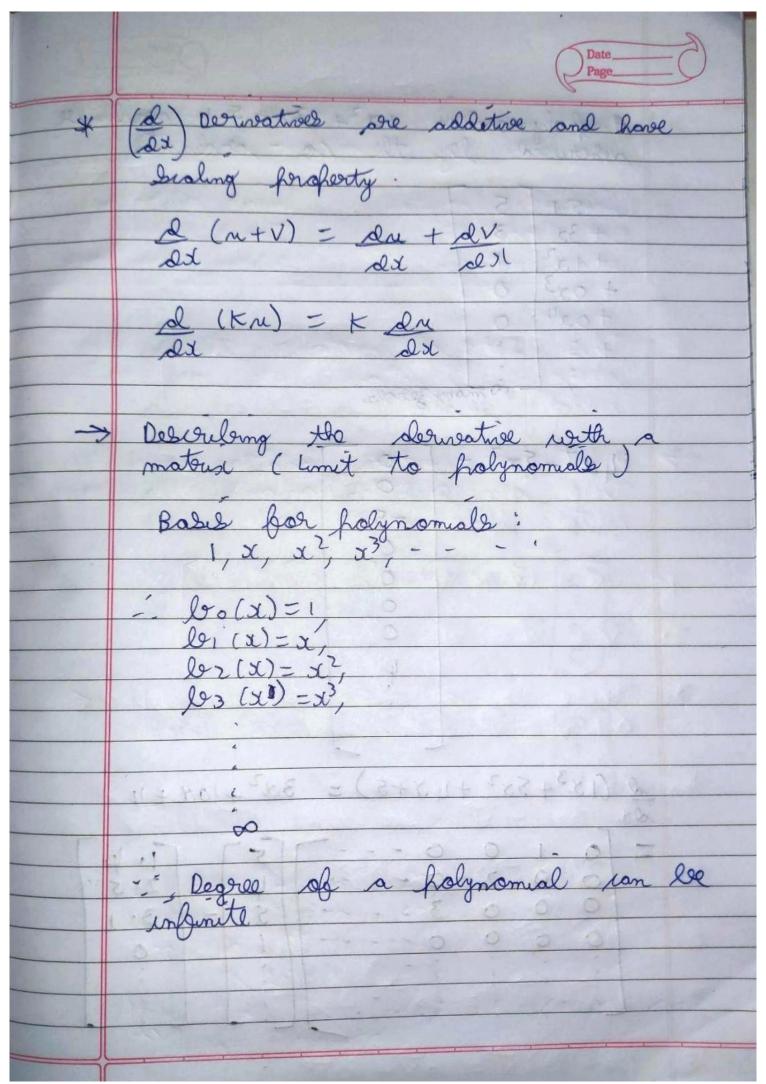
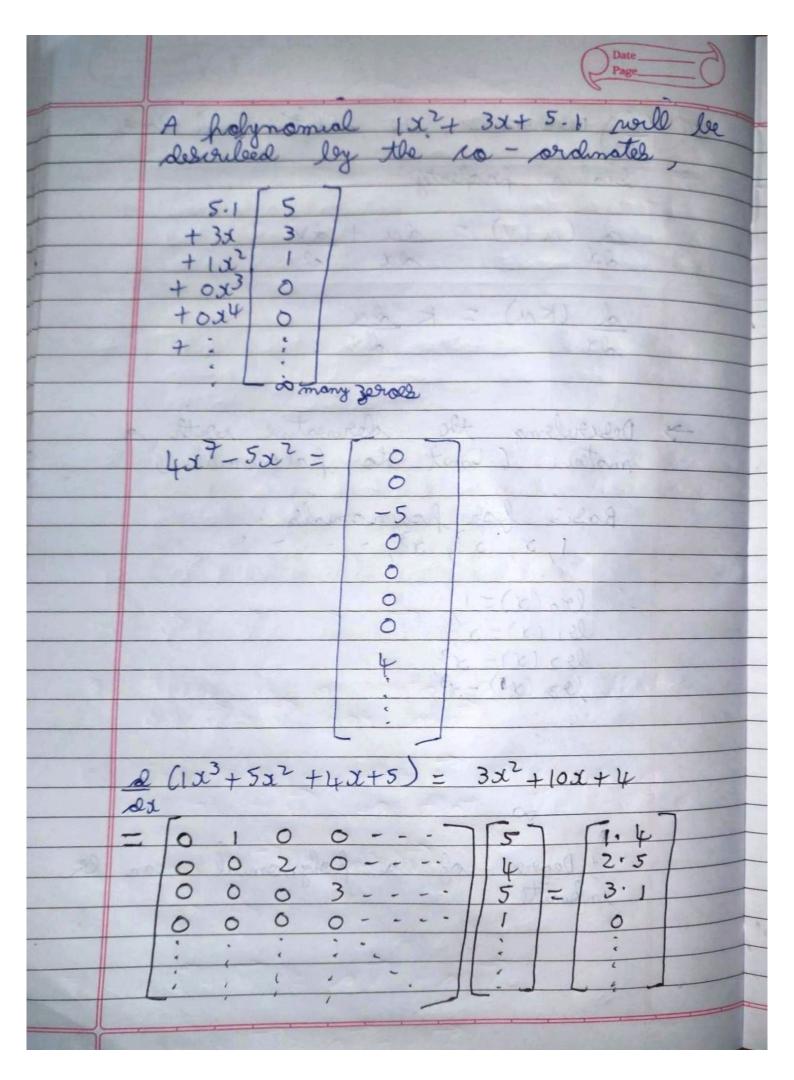
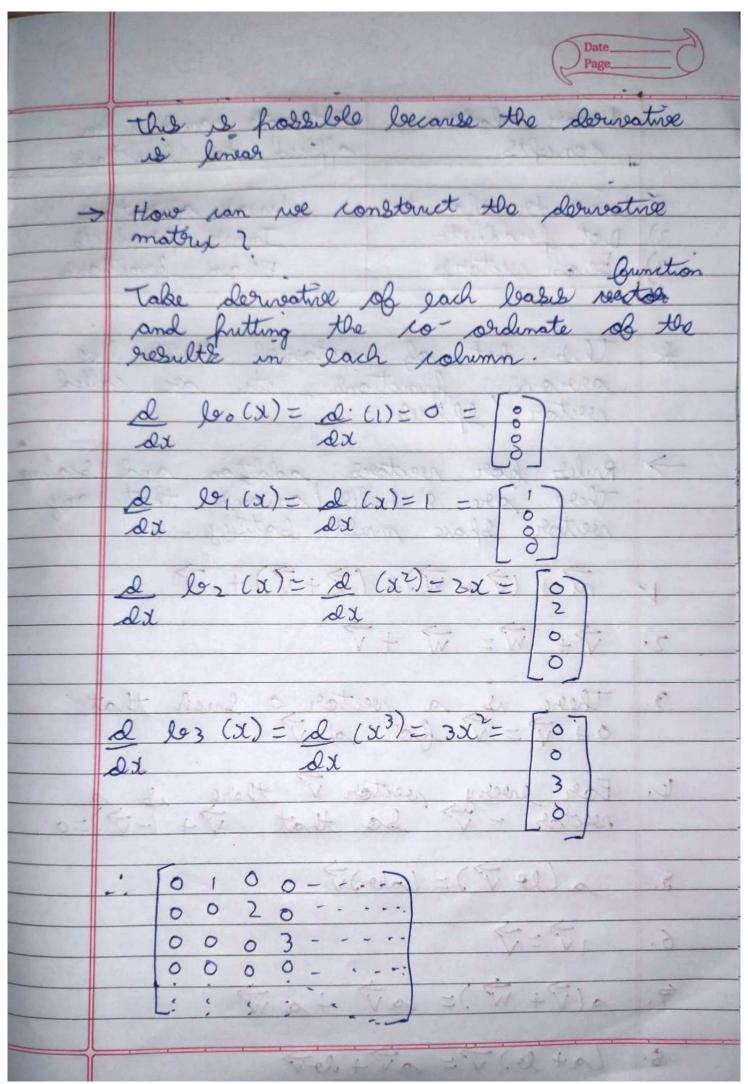
Date Lecture - 16 Alestract vector show -> there are many nectorish things. one fromment example is functions. (B+g)(x)= b(x)+g(x)  $\begin{bmatrix} x_1 \\ y_1 \\ y_2 \\ y_2 \\ y_3 \\ y_4 \\ y_4 \\ y_5 \\ y_5 \\ y_6 \\ y_$ (2f)(x)= 2 f(x) This is similar to, like relators, functions too, can be Said to have linear transformations. [ ( 1 213 - x ) = 1 x2-1 Lyan be a derivative (D/Dx). Derneatives too, convert one function too another Here they can also be called as

\* How can transformation of frinctions be linear? -> Formal definition of linearity: A function is linear if it estibles two properties: 1 Additionty: L (V+W) = L(V)+L(W) 1 Scaling: L(xv)= xL(v) and w' then apply a transformation to their sum, you get the same result as it you add the transformed revisions of w and w' 5) Scaling means when you scale a veitor by loy some number, then offly the transformation, you get the Same reltimate rector as it you scaled the transformed version of V ley ste that Same amount ". "Linear transpormations proservel addition and Scalar multiplication"







	Date Page
	Linear algebora Alternate names when applied to functions
2	Dot forabile Timer froducts  Eligen vectors  Eligen functions
*	this set of rectorish things like services, functions, etc are called vector spaces.
	Rules for vectors addition and scaling. There are 8 Irules / schools that any vector space must satisfy.
2.	$\overrightarrow{n} + (\overrightarrow{v} + \overrightarrow{w}) = (\overrightarrow{n} + \overrightarrow{v}) + \overrightarrow{w}$ $\overrightarrow{v} + \overrightarrow{w} = \overrightarrow{w} + \overrightarrow{v}$
3.	there is a vector o such that $0+\sqrt{2}=\sqrt{2}$ for all $\sqrt{2}$
¥,	For every vector v there is a rector - V so that $\overrightarrow{V} + (-\overrightarrow{V}) = 0$
5.	$a(lo \vec{v}) = (alo)\vec{v}$
7.	ALV+W)= aV +aW
8.	(a+ le) = aV + lev

