CS	563:	Assignment	1

- DAKSH BHUVA
- CWID: 10475468
- Ol: x= [5, -3, -1, 2]
- (1) 8 the squared 12-norm of x,

$$= (5)^{2} + (-3)^{2} + (-1)^{2} + (2)^{2}$$

$$\frac{25+9+11+49+043(3)}{|x|_{2}^{2}}$$

[20+35+18]

$$a^{T}x = [4, -2, 6, -1] = -3$$

*
$$02: A = \begin{bmatrix} 6 & 1 & -2 \\ -5 & 7 & 9 \end{bmatrix}$$
 and $B = \begin{bmatrix} -4 \\ 5 \end{bmatrix}$

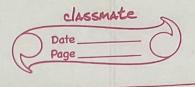
$$Ab = \begin{bmatrix} 6 & 1 & -2 \\ -5 & 7 & 9 \end{bmatrix} \begin{bmatrix} -4 \\ 5 \end{bmatrix}$$

$$= (6)(4) + (5)(1) + (2)(2)$$

$$(-5)(-4) + (7)(5) + (9)(2) =$$

$$Ab = \begin{bmatrix} -23 \\ 73 \end{bmatrix}$$

(2) the mostrix-mostrix product:



* 03:
$$x = [x_1, x_2, x_3]$$
 and $y = \alpha_1^2 + \log_2 \alpha_2 - \alpha_3$

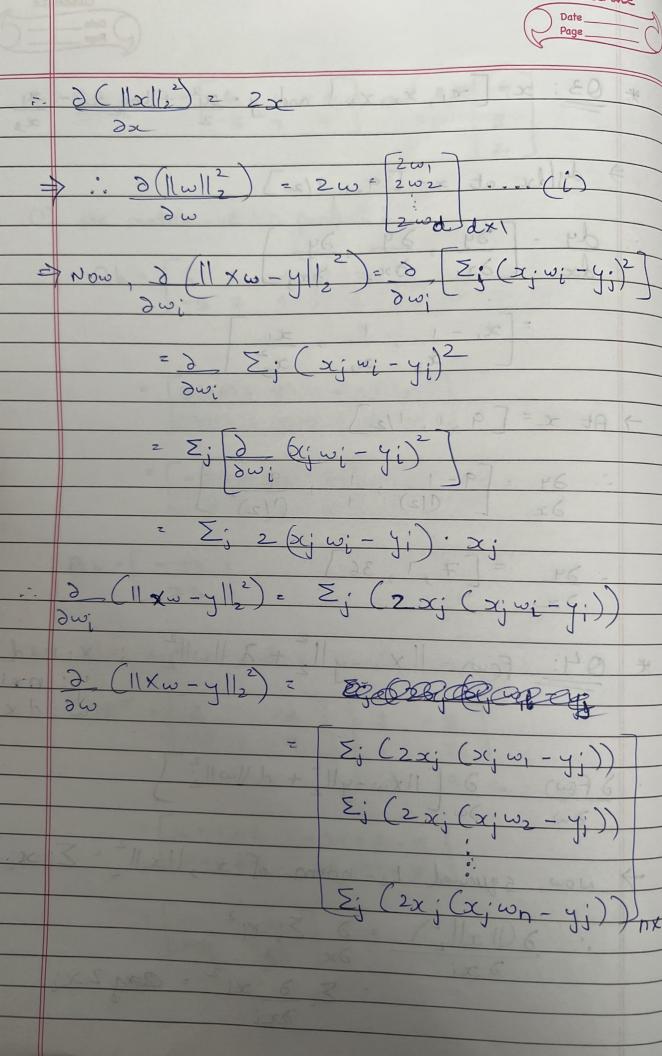
$$\frac{\partial y}{\partial x} = \left[\frac{\partial y}{\partial x_1}, \frac{\partial y}{\partial x_2}, \frac{\partial y}{\partial x_3} \right]$$

$$\frac{1}{3} \frac{3}{2} \frac{9}{2} \frac{9}{1} \frac{1}{12} \frac{9}{12} \frac{9}{12} \frac{1}{12} \frac{9}{12} \frac{1}{12} \frac{1}{$$

$$\frac{1}{3} = \begin{bmatrix} 7, 1, 36 \end{bmatrix}$$

* 04:
$$f(w) = || xw - y||_2^2 + \frac{1}{2} ||w||_2^2 :- x: nxd$$

 $y: nxl$
 $w: dxl$



6=	and G		Date	0
	Σ	(2x; (x; w, -y;)) (2x; (x; w, -y;)) : (2x; (x; w, -y;))	+ 200	2-
->		and the second te		

=