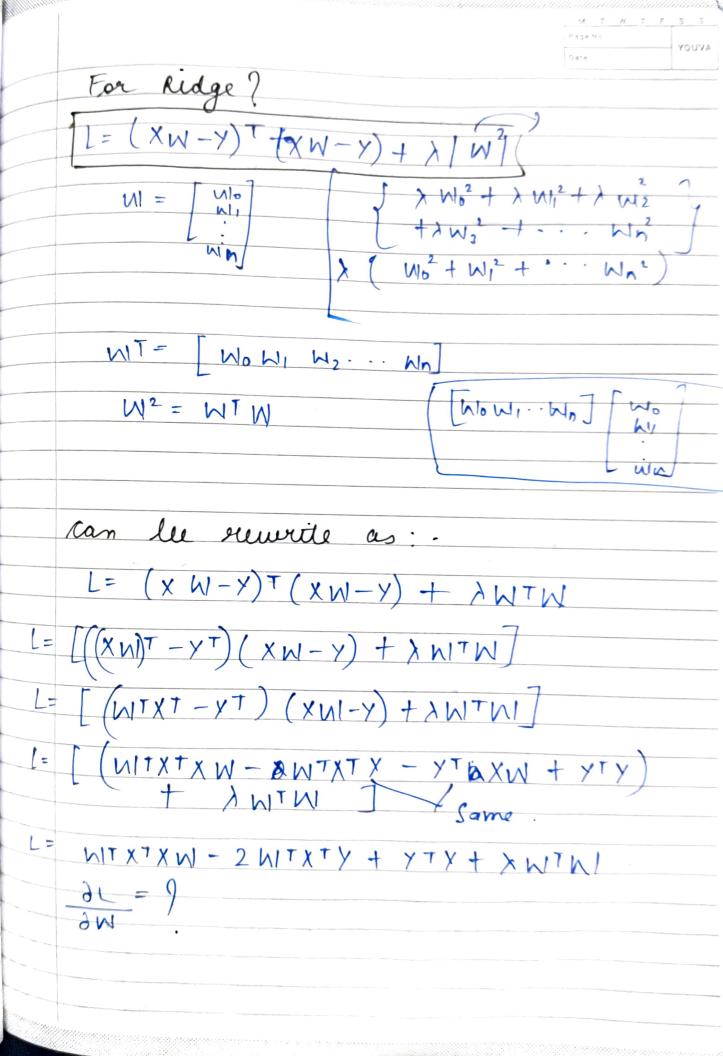
Mathematic lechind Ridge L= \(\frac{1}{4} \left( \frac{1}{4} - \text{m}x\_i - \text{b} \right)^2 + \lambda m^2 9 0 gol = 0 differentiation uset b will remain some as in simple linear regression b= y-mx / y-> mean x-> x-mean, m-> slope  $= \sum_{i=1}^{n} \left( \frac{y_i - mx_i - y + mx}{y_i} \right)^2 + \lambda m^2$ (Using (1)) =) 2 = (y; -mx; -y+mx). d (y,-mx,-y+)
3m == (y; -mx; -y+mx). d (y,-mx,-y+) + 2/m dm = 0  $2 \leq \left[ \left( \frac{1}{4} - mxi - 4 + mx \right) \left( -xi + x \right) \right] + 2\lambda m = 0$ -25 (4-mxi-y+mx)(x:-x)+21m=0  $\lambda m - \frac{1}{2} \left[ (y_1 - \overline{y}) - m(x_1 - \overline{x}) \right] (x_1 - \overline{x}) = 0$  $\lambda m - \frac{1}{2} (y_1 - \overline{y}) (x_1 - \overline{x}) - m(x_1 - \overline{x})^2 = 0$ 

1m- = (4,-4)(xi-x) + m = (xi-x)=  $\lambda m + m \leq (x_1 - \overline{x})^2 = \leq (y_1 - \overline{y})(x_1 - \overline{x})$  $m(x + \frac{1}{4})^2 = \frac{1}{4}(y_1 - y_1)(x_1 - x_1)$  $m = \underbrace{\sum_{i=1}^{2} (y_{i} - \overline{y})(x_{i} - \overline{x})}_{\underbrace{\sum_{i=1}^{2} (x_{i} - \overline{x})^{2} + \lambda}$ Ridge regression on (slope) If  $\lambda = 0$  then in will be some as simple lineau regueseur Ridge for higher demension 1 X1 X2 X3... Xn y (n+1 cals)

No. 11 112 112... Nn Coefficento. modes
L= \(\frac{1}{41} - \frac{1}{1}\)\\
\[ \frac{1}{41} - \frac{1}{1}\]\\
\frac{1}{41} - \frac{1}{1}\]\\
\[ \frac{1}{41} - \frac{1}{1}\]\\
\ For multiple lineau reguession Los function = (XW-Y) (XW-Y) 



$$=) 2XTXW - 2XTY + D + 2\lambda M = D$$

$$=) X^{\dagger}XW + \lambda W = X^{\dagger}Y$$

$$=) M \notin X^{\dagger}X + \lambda I) = X^{\dagger}Y$$

$$=) M = (X^{\dagger}X + \lambda I) - X^{\dagger}Y$$

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