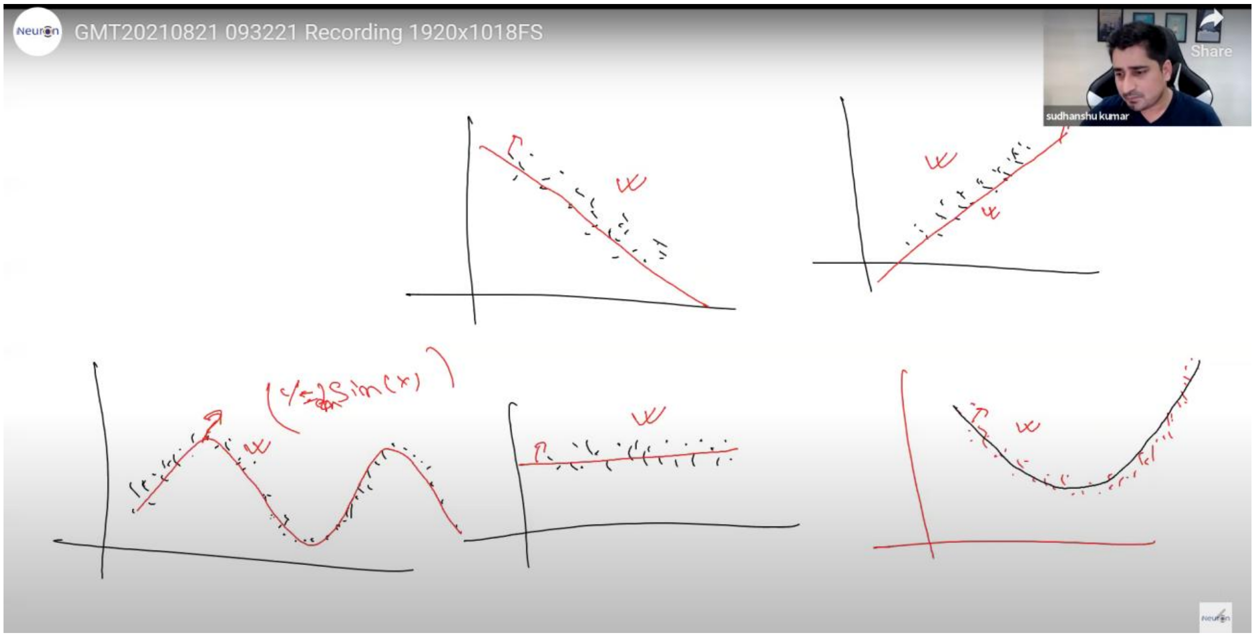
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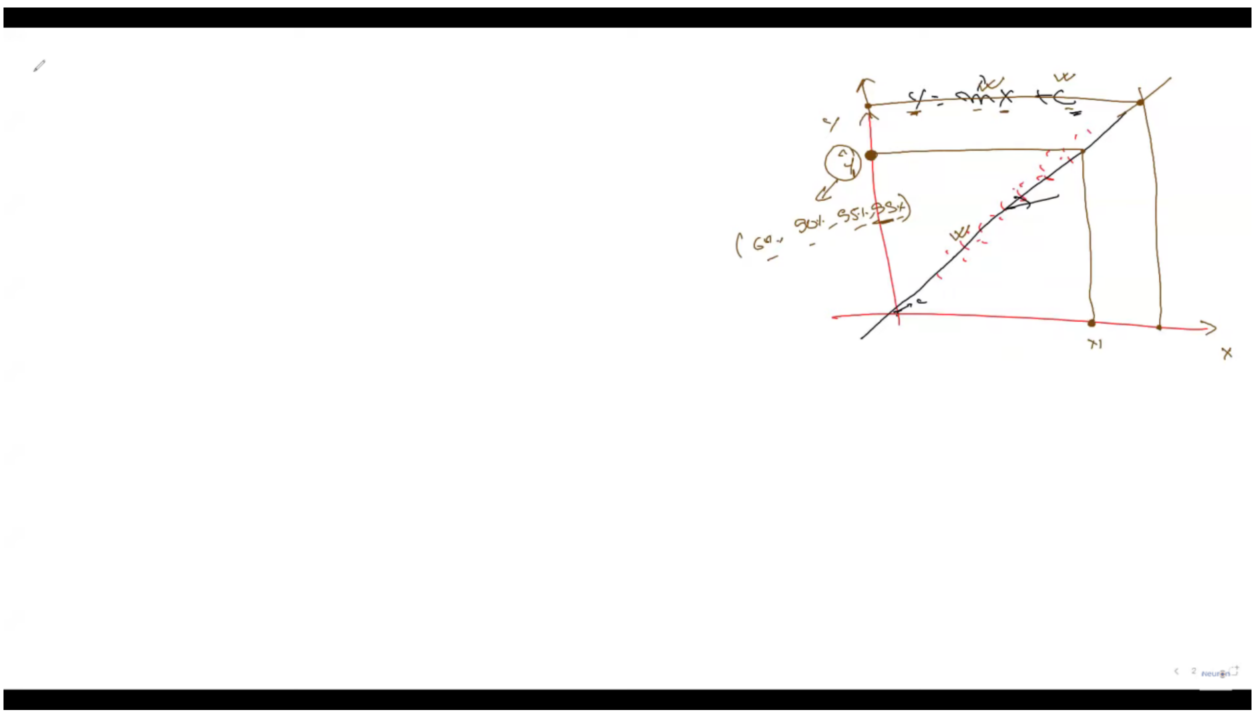
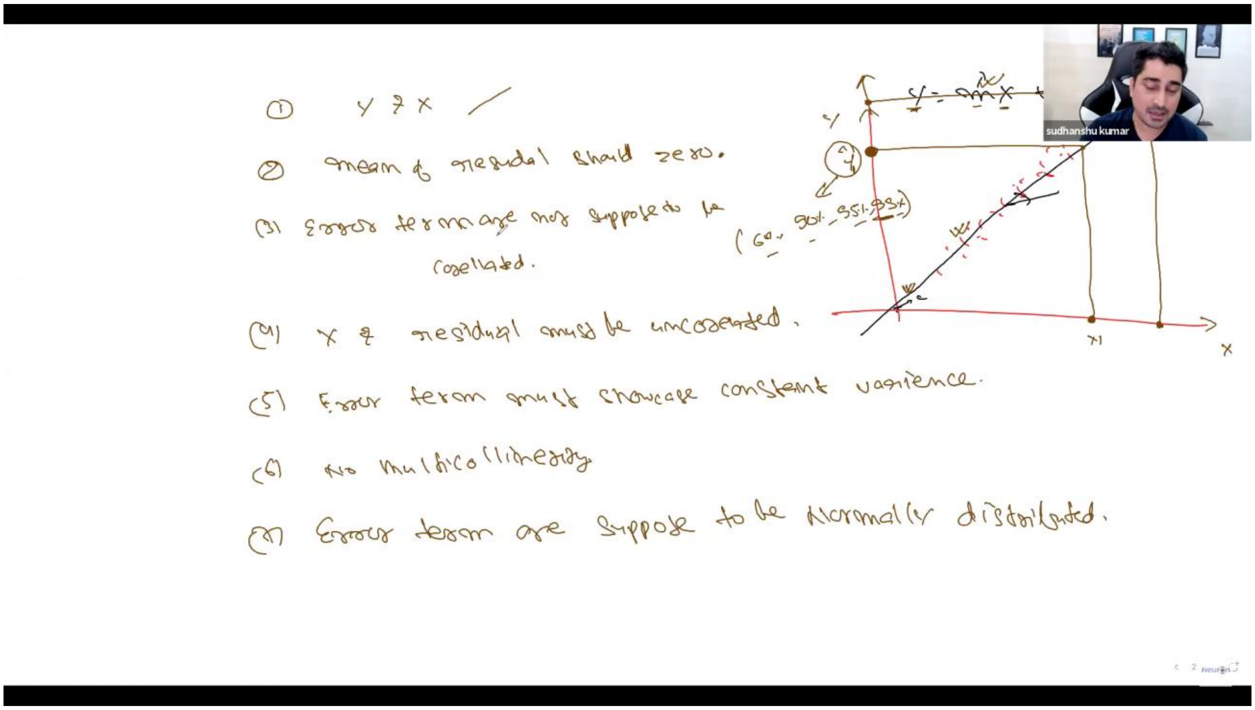
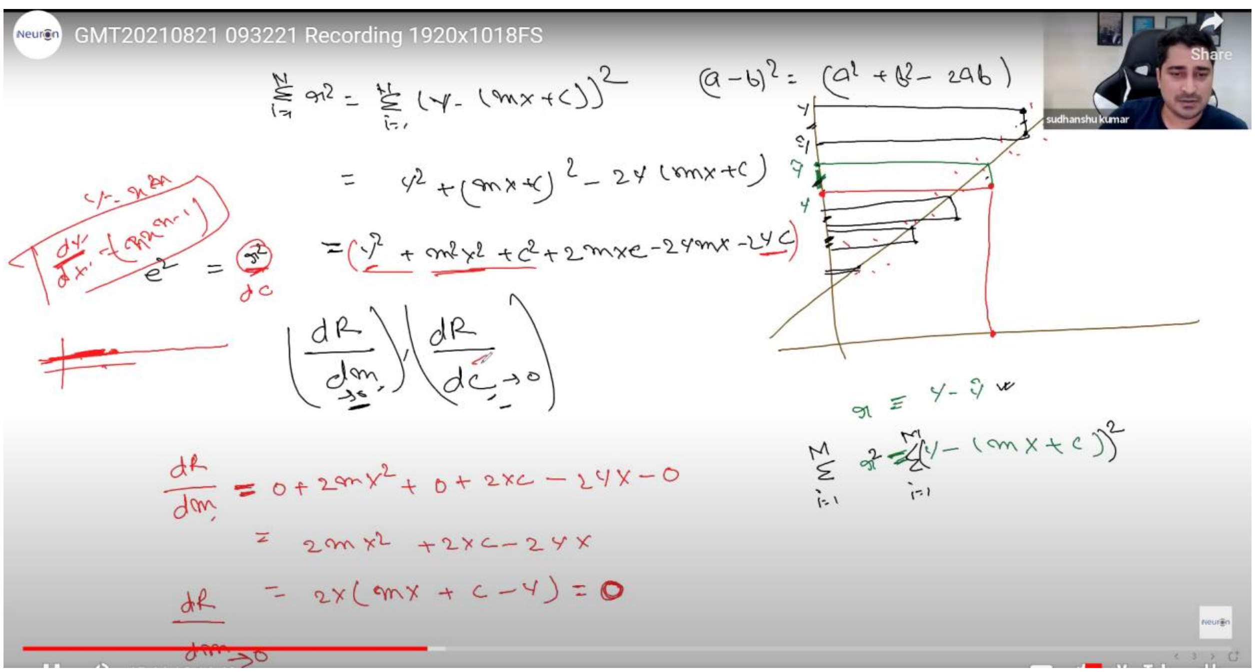



① y & x
② mean of residual should zero.
(3) Error term are not suppose to be corelated.
(4) x & residual must be uncorrelated.
(5) Error term must showcase constant varience.
(6) No multicollinearity
(7) Error term are suppose to be Normally distributed.
y = mx + c
x1
x
y
sudhanshu kumar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$\sum_{i=1}^{N} r^2 = \sum_{i=1}^{N} (y - (mx+c))^2$
$(a-b)^2 = (a^2 + b^2 - 2ab)$
$= y^2 + (mx+c)^2 - 2y(mx+c)$
$= (y^2 + m^2x^2 + c^2 + 2mxc - 2ymx - 2yc)$
$e^2 = \frac{dr^2}{dc}$
$\left(\frac{dR}{dm}\right), \left(\frac{dR}{dc} \to 0\right)$
$r = y - \hat{y}$
$\sum_{i=1}^{M} r^2 = \sum_{i=1}^{M} (y - (mx+c))^2$
$\frac{dR}{dm} = 0 + 2mx^2 + 0 + 2xc - 2yx - 0$
$= 2mx^2 + 2xc - 2yx$
$\frac{dR}{dm} = 2x(mx + c - y) = 0$

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$$\nabla E_c = \nabla R = \frac{dR}{dc} = \sum_{i=1}^{m} 2(b + mx - y) = 0 \quad - ①$$

$$\frac{dR}{dm} = \sum_{i=1}^{m} 2x(mx + c - y) = 0 \quad - ②$$

$$y = mx + c$$

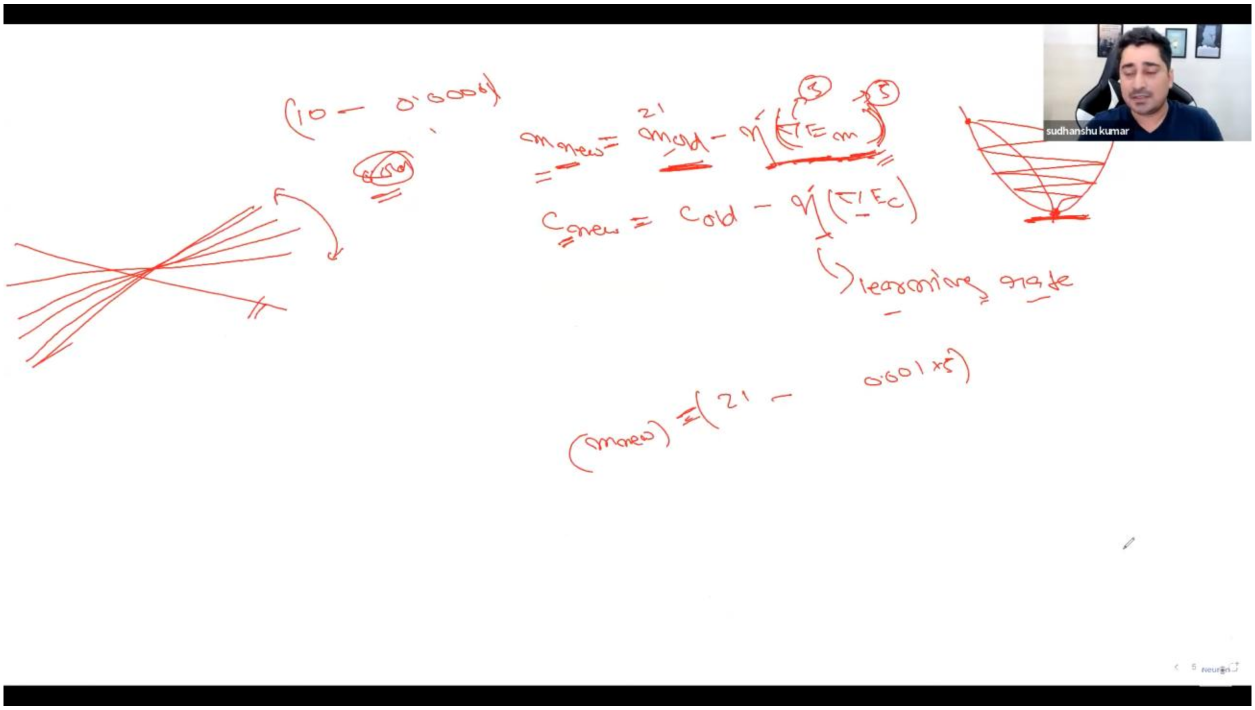
$$\sum_{i=1}^{m} 2c + \sum_{i=1}^{m} 2mx - \sum_{i=1}^{m} 2y = \frac{0}{2} \quad - ①$$

$$\sum_{i=1}^{m} 2x\,mc + \sum_{i=1}^{m} 2xc - \sum_{i=1}^{m} 2xy = \frac{0}{2} \quad - ②$$

$$m_{new} = m_{old} - \eta \frac{1}{m}\left(\left(\sum_{i=1}^{m} (y - \hat{y})\right)\right) = ③$$

$$c_{new} = c_{old} - \eta \frac{1}{m}\sum_{i=1}^{m}(y - \hat{y})$$

iNeuron


(10 − 0.0001)
m_new = m_old − η(∇E_m)
C_new = C_old − η(∇E_c)
learning rate
(m_new) = (21 − 0.001×5)
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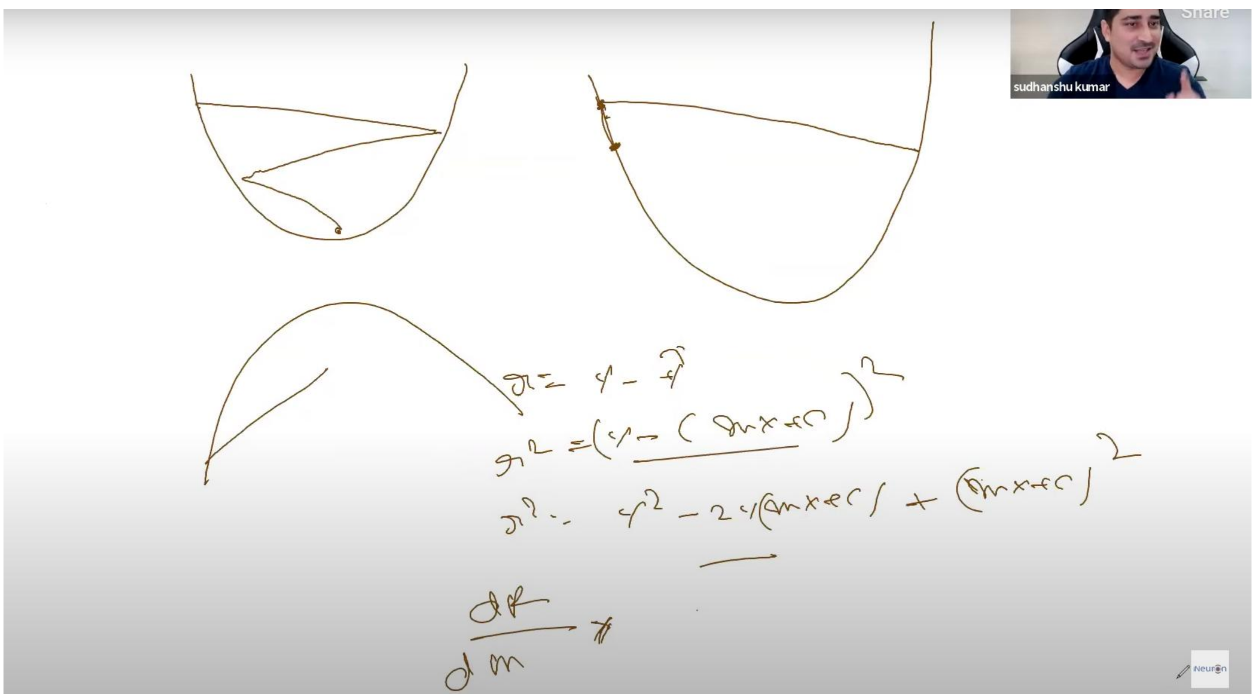
r = y − ŷ
r² = (y − (mx+c))²
r² = y² − 2y(mx+c) + (mx+c)²
dr/dm
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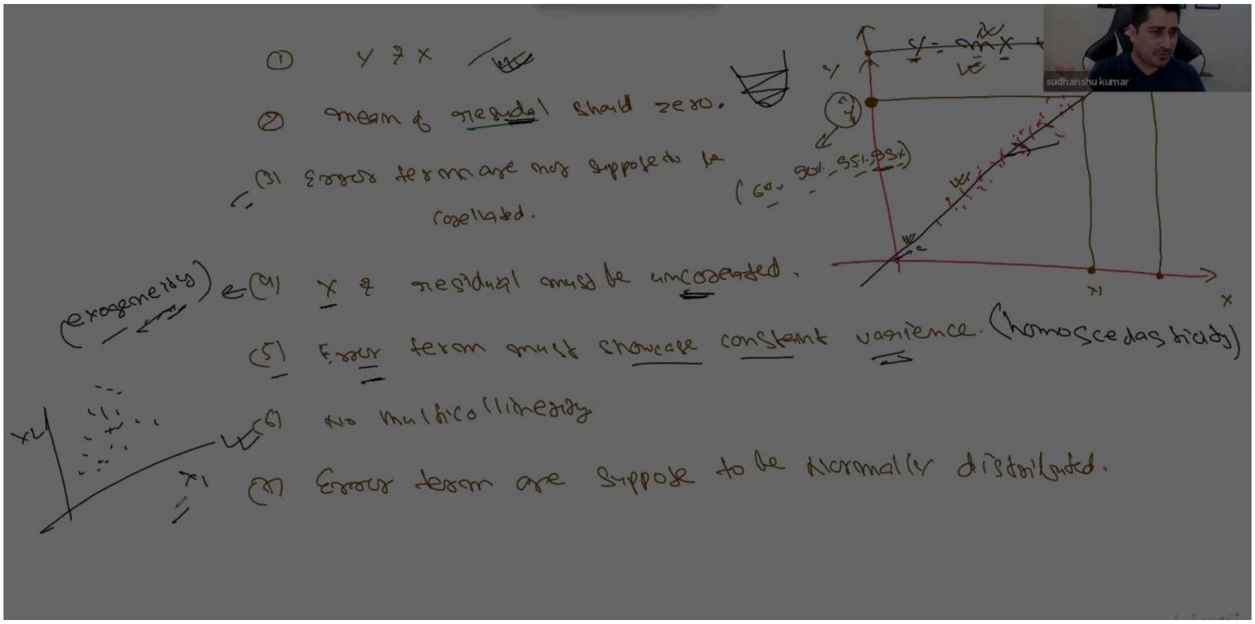
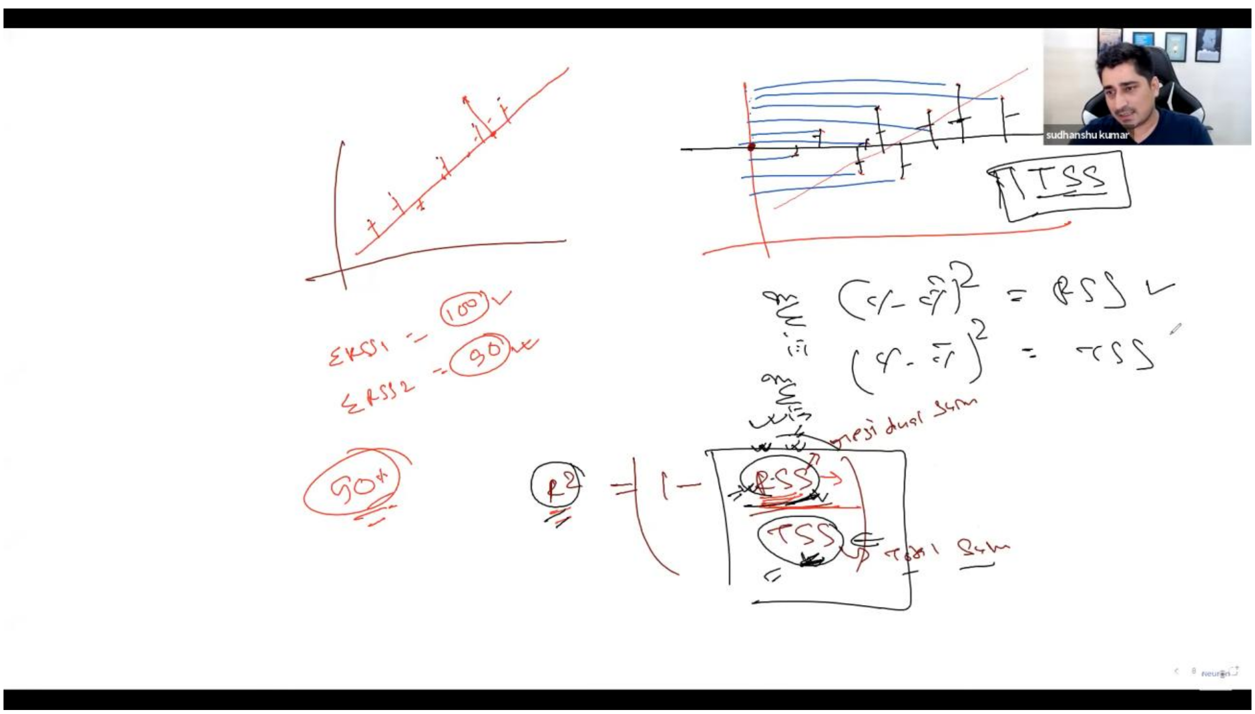

① y ∝ x
② mean of residual should zero.
(3) Error terms are not suppose to be corellated.
(4) X & residual must be uncorelated.
exogeneity
(5) Error term must showcase constant varience. (homoscedasticity)
(6) No multicollinearity
(7) Error term are suppose to be normally distributed.
sudhanshu kumar


TSS
ΣRSS1 = 100
ΣRSS2 = 90
90%
$(y-\hat{y})^2$ = RSS
$(y-\bar{y})^2$ = TSS
residual sum
Total sum
$R^2 = 1 - \frac{RSS}{TSS}$
sudhanshu kumar