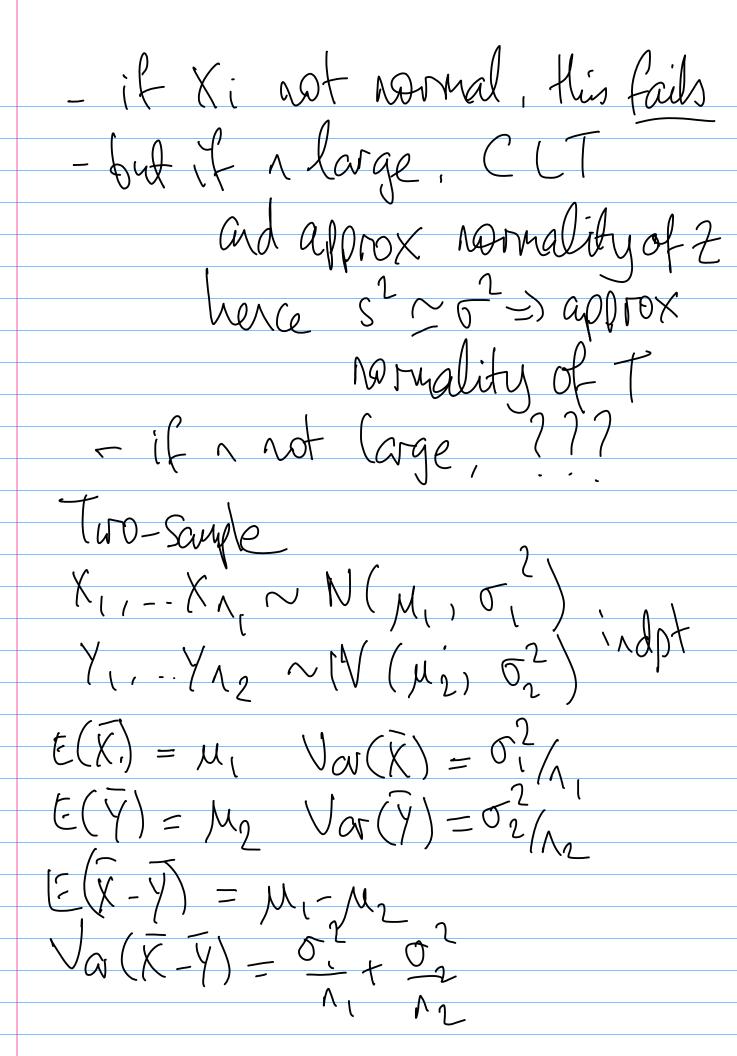
Ore-sample $X_{1} - X_{1} \sim N(\mu_{1}\sigma^{2})$ indet $\overline{X} = \frac{1}{2} \sum_{i} X_{i}$ $-\frac{1}{2} \sum_{i} X_{i}$ $-\frac{1}{2} \sum_{i} X_{i}$ $-\frac{1}{2} \sum_{i} X_{i}$ - X ~ normal. 2- X-M ~ N(0,1) if or known, done. But if J2 not (nown, estimate or by S2 = E(Xi-XI) T= X-M ~ 7 >> S/N/

 $- def: if 2, ---- 2_k \sim N(0, 1)$ $+ \sum_{j=1}^{2} 2_j \sim \chi_k$ $- \int_{-1}^{2} \frac{1}{j} \left(\sum_{j=1}^{2} 2_j - \sum_{j=1}^{2} 2_j \right) dx$ - def: if 2~N(O,1) U~X1 Her Z ~ th - fact: (n-1)52 2 - \tact: \(n-1) \) T = X-M (X-M) (J/JA S(Nn = S/Nn | 5/Nn $=\frac{2}{5/5}=\frac{2}{\sqrt{S^{2}/5^{2}}}=\frac{1}{\sqrt{N-1/5^{2}-N-1}}$ $= \frac{2}{\sqrt{U/(N-1)}} \sim t_{N-1}$



X-y-(M-M2) N 02 + 52 NN if of whom, estima $(N_1-1)s_1 + (N_2-1)s_2, \qquad 2$ -1 + 1 - 2 N_1+N_2-2

$$(N_{1}-1)S_{1}^{2} \sim \chi^{2}$$

$$So its mean$$
is $N_{1}-1$
and variance
$$S(S_{1}^{2}) = S_{1}^{2}$$

$$Var(S_{1}^{2}) = \frac{2}{N_{1}-1}$$

$$Var(S_{1}^{2}) = \frac{2}{N_{1}-1}$$

$$Var(S_{1}+S_{2}) = \frac{2}{N_{$$

ap 26 22 Ŋ O 1 7, 7, 2 2 . CK

Finally in formula for b, est. of by Siz Welch-Satterthwaite t use when dont, assure in practice, lose little by using ever if of = of