

this expected  
 time: value,  
 next variance,  
 time  $s$ ),  
 covariance,  
 correlation

read: IS ch. 4

STAT 131  
 19 May 20

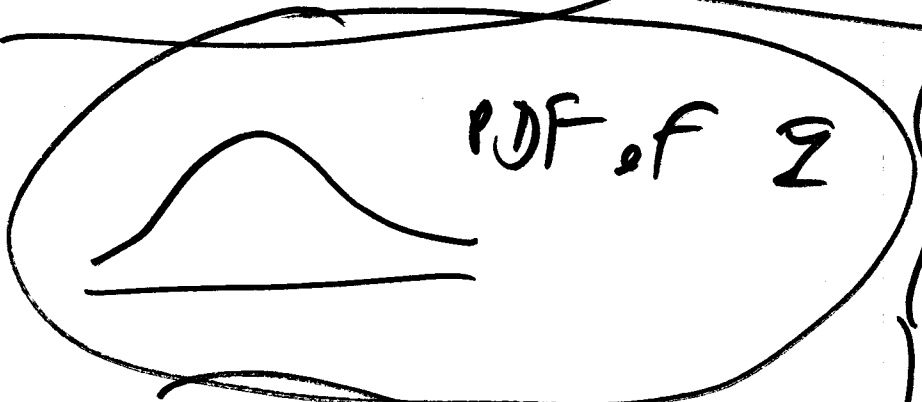
(lecture)

reminder:

~~catch~~ catch-up lecture ①

tomorrow wed 20 May 2020

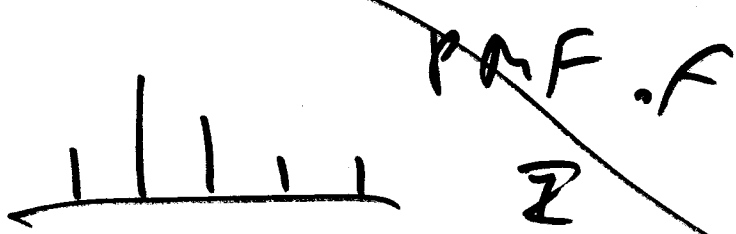
5.30 - 7.05



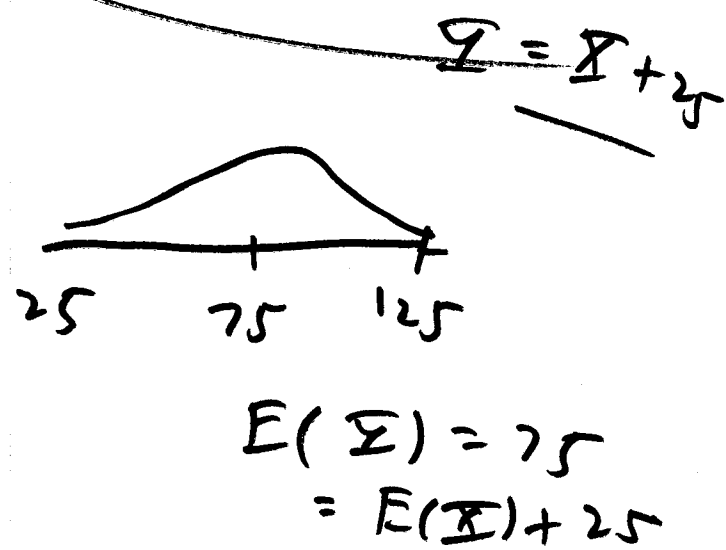
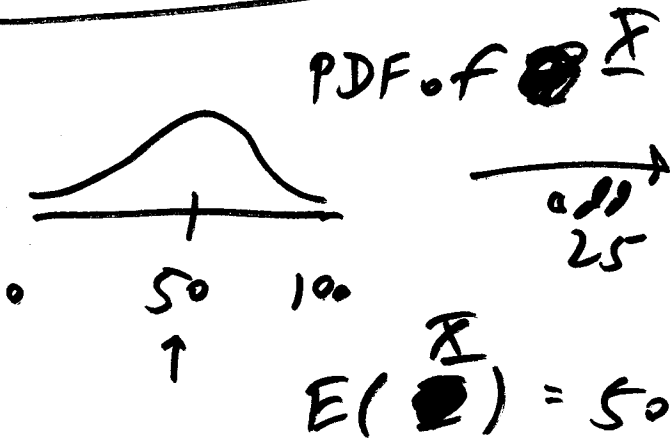
PDF of  $Z$

3 summary  
 measures:

- center
- spread
- shape

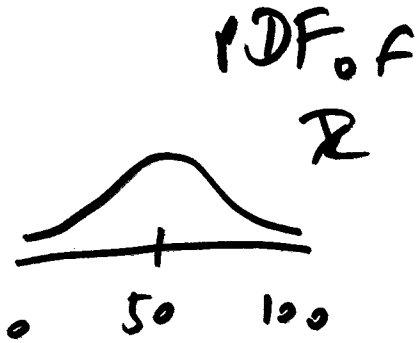


PMF of  $Z$



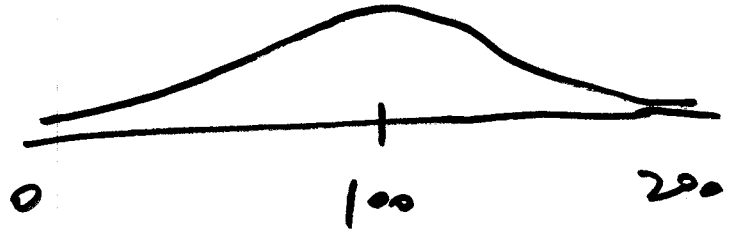
Rule 1)  $E(X + c) = E(X) + c$

↑ any real constant



multiply by 2

$\Sigma = 2X$



$E(X) = 50$

$E(Y) = 100$

any real constant

Rule 2

$E(cX) = cE(X)$

Rule 3

$E(c_1X + c_2) =$

$c_1E(X) + c_2$

Rule 4

$E(\sum_{i=1}^n X_i) =$

$E(X_1 + X_2 + \dots + X_n) = E(X_1) + E(X_2) + \dots + E(X_n)$

Rule 4

$$E\left(\sum_{i=1}^n X_i\right) =$$

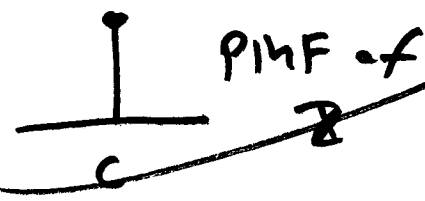
$$\sum_{i=1}^n \underline{E(X_i)}$$

Rule 0

$$E(c) = c$$

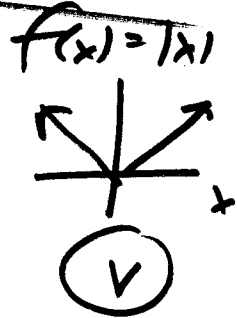
whether or not

the  $X_i$  are independent

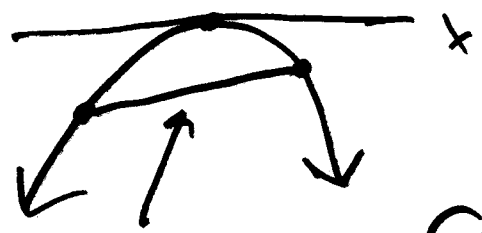


$y = x^2$  ← convex = bowl-shaped up

bowl-shaped up



above  $f(x) = x^2$



below  $f(x)$

$$y = f(x) = -x^2$$

bowl-shaped down =

concave

$$f(x) = \frac{1}{x}$$

convex

concave

$$f(x) = x^3$$

(4)

convex

concave

concave

convex

