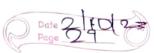
Expertation of Bernoulle Dectophition What is expectation? Probability.



=> Expectation of Descrete random variables. FCXX= 5 x PCX9) E(x) is the expeltation value of the discrete random variable x variable x - PCRD 13 The probability mass function of Example's Let R be the value that comes up with you roll a fair 6-sided die. > Then the expected value of & 95; E(R) = 1×1+2×1+3~1+4×1 6 6 6 6 + 5×1+6×1 = 1 (42) - 2



e-ger for tossing a coin s=d 4,Ty.

x: getting head

x= Loing = P(H)=1 => Expertation of Personalli Distorbutions $\frac{1}{2}\frac{\partial(x-1)}{\partial(x-1)} = \frac{1}{2}\frac{\partial(x)}{\partial(x-1)} = \frac{1}{2}\frac{\partial(x-1)}{\partial(x-1)} = \frac{1}{2}\frac{\partial(x-1)}{\partial(x-$ PCX=DD= 1-P : E[x] = P(x=1).] + P(x=0).0 = P.1 + (1-P).0Bernoulli distribution is given by E[x]=p. => Vargance Of Discrete Random vargables: The rarrance can be defined as the difference of the mean of X2 and the square of the mecen of x. > Mathematically, the statement can be worten as follower Var[x]= E[x2]-(E[x])2



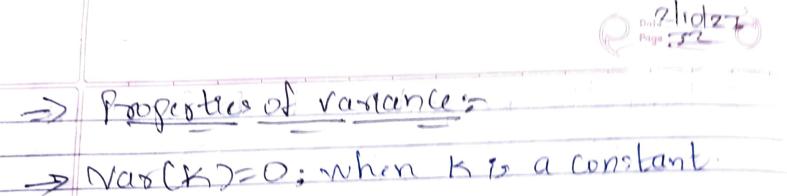
= ECXJ= 579.P(X) · E[x]= = 2 xg. (xg) E[\$(x)] = 7.9(xo)-P(xo) For variance of solling die & getter Fond the rangence & standard deviation when 1/6 E[0]= I [from previous question = 1 (1+4+9+16+25+36) :- Na-sance; V[x]= 9] -V[x]= 91-29



> Using the properties of E(x), we get, $E[x^2] = 9 x^2 \cdot P(x = x)$ · ED2]= 12.p+6-(2-p)= p -> Substituting the value en Var [x]

= E[x]-(E[x])

: Var[x]= p-p2 - Var[x]= P(1-P) -> Mence, the variance of a Bernoulle distribution is var [x] = p[1-p] Chate 2011: If the difference between expectation of the square of a random variable CEESI) and the square of the expectation of the random variable (FBJ)2 is denoted by Rinhan? (A) R=0 (B) R<0 SC) R7=0(D) R70 -> R= E[x]-[x)= P(1-P) -> The difference between Erre J and CERTS so called variance of a random variable. -> Varance masures how far a set of numbers is spread out. CA variana of zero indicates that all the value goe Edentecal? A Mon-Zoro Variance jo always postaven



- Nar [ax-tb) = a var (x).