

1. Probability that Head appears at pth toss,

The same		·
	R	P(X=k).
	1	P
3	2	p. (1-p)
	3	p. (1-p) ²
	E	p(1-p)2-1
N. Williams	The state of the s	

For Any Integer &,

$$P(x>d) = P(x+1) + P(x+2) + -$$

$$= P(1-P)^{d+1} + P(1-P)^{d+2} + P$$

$$= p(1-p)^{2} = 1 + (1-p) + (1-p)^{2} + \dots$$

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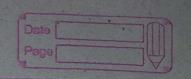
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P(x>mm (x>n) = P(x>m+n) A P(x>n)

$$P(X>mtn | X>n) = P(X>mtn | X>n) = P(X>m)$$

$$P(X>mtn) = Phs$$



2. The probability distribution of a Poisson random variable X with parameter d,

$$P(x) = e^{-\frac{1}{2}x}$$
, $x - paiameter$.

Now, . of
$$n=0$$
 $n=0$ $n=0$

Hence, Mean (X) = d. = E(X)

$$Vour(x) = E(x^{2}) - (E(x))^{2}$$

$$= E(x^{2} - x + x) - (E(x))^{2}$$

$$= E(x(x-1) + x) - (E(x))^{2}$$

$$= E(x(x-1) + E(x) - (E(x))^{2}$$

$$= E(x(x-1)) + E(x) - (E(x))^{2}$$

$$= E(x(x-1)) + d - d^{2}$$

 $E(X(X-1)) = \sum_{n=0}^{\infty} \chi(n-1) e^{-t} d^n$ = = 2 (21) e d 2 2=2 nl = e d 2 (2) = 2 2 Von (x) = 2/+1-12 = 1. Mean (x) = Var (x) = 1

