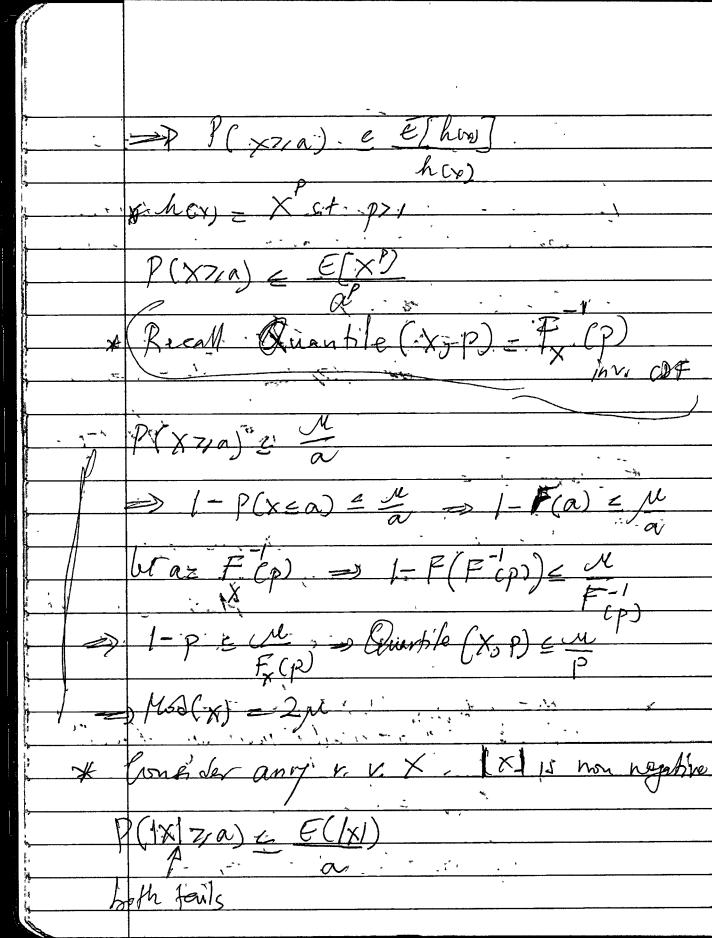
Lee. 21 Nov.=30 Let X-Le mon repetio v. v. mills finite expertente is any les a >0 a constition Consider the inequality

all x, a = x True x franco

if x, a a a a a x, a

x a P(v = x = x, a) E[1] x y al E [N pria] E W P (x ra) E N Markov's inequality

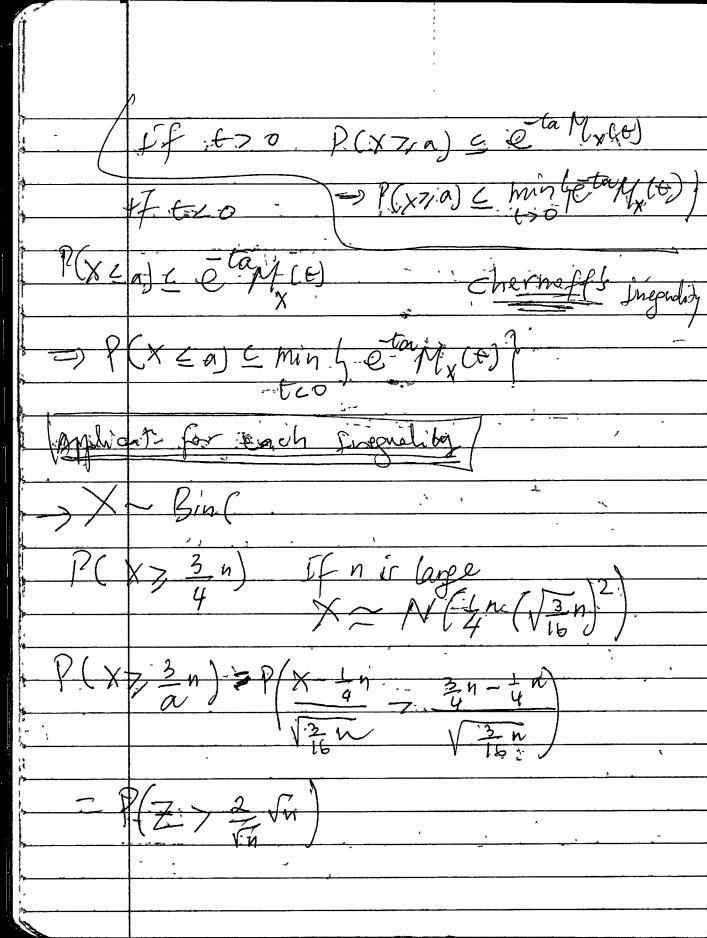
Toul bound: P(x, 70) let hea monotomically increasing function h(a) 1/hcm) Tha = how P(hex) 7/h(a)) = E.Chex)



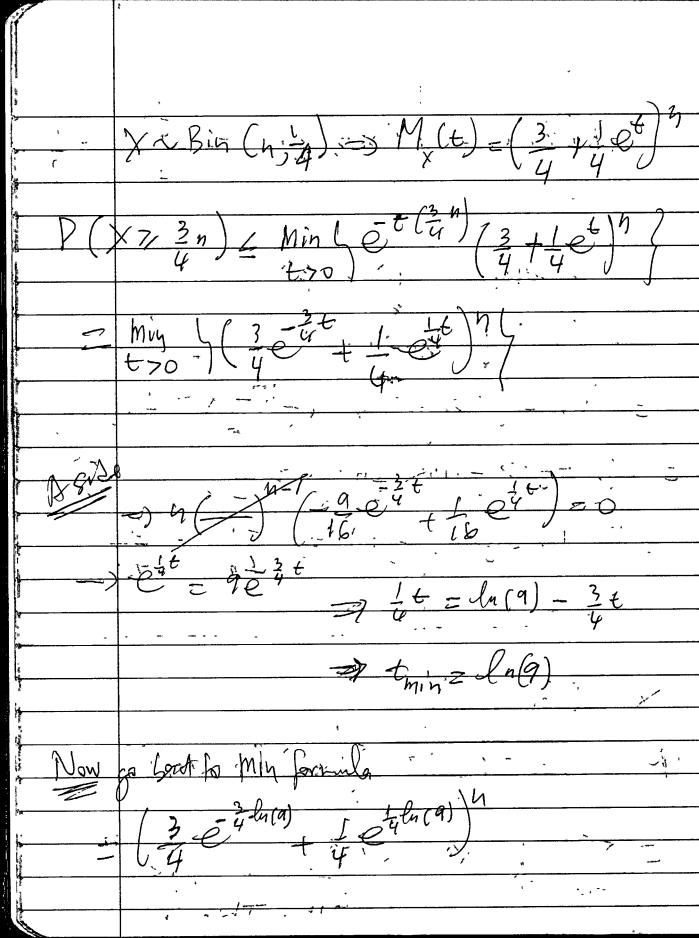
*Let x be any r.v. with friends, finite or let /= (x=1)2 Note / is my negation Traile C(V) - E(XM)3 - or a?) ¿ or (1x-M=a) & az Chebyshain's English let x ang r.v. r y = etx y P(YZC)-EE(Y) P(etx 7/19) = E[etx]

My(x) = E[etx] :. Movent g- funcie D(etx-, eta) = E(ety) - Mx(t)
eta

eta



Morkov's P(x-2,3n) 5 4n z Chebyshan's P(x7,3) = P(x:1, 3, -1) = P(x-1n > 1n)+ P(1n-X > 1n) = P(X-1n> 1nDR 1n-X Z 1n) $= P(|x|^{\frac{1}{4}}|x|^{\frac{1}{2}})^{\frac{1}{4}} = \frac{3}{4^{\frac{1}{4}}}$ $M(t) = E(e^{tx}) = \sum_{x=0}^{n} (x) p^{x} (1-p)^{n-x}$ $= \sum_{x=0}^{n} (x) (x) p^{x} (1-p)^{n-x}$ $= (1-p+p)^{n-x}$



 $> 2 \left(\frac{3}{4} \cdot 9^{\frac{1}{4}} + \frac{1}{4} \cdot 9^{\frac{1}{4}}\right)^n$ $\frac{7}{4}\left(\frac{3}{9}+1\right)^{\frac{1}{2}}=\frac{\sqrt{9}\left(\frac{1}{9}\left(\frac{1}{9}\right)^{\frac{1}{2}}\right)}{4}$ -> Exponentially fact Consider any 2 r.v. X, Y with finite

W; (X-ex)² c E R W is hon

regative = E(X-cy)20 = E(x=2cxx+cy)0 => E(x) -2 É E(x) + C'E(y) 70

