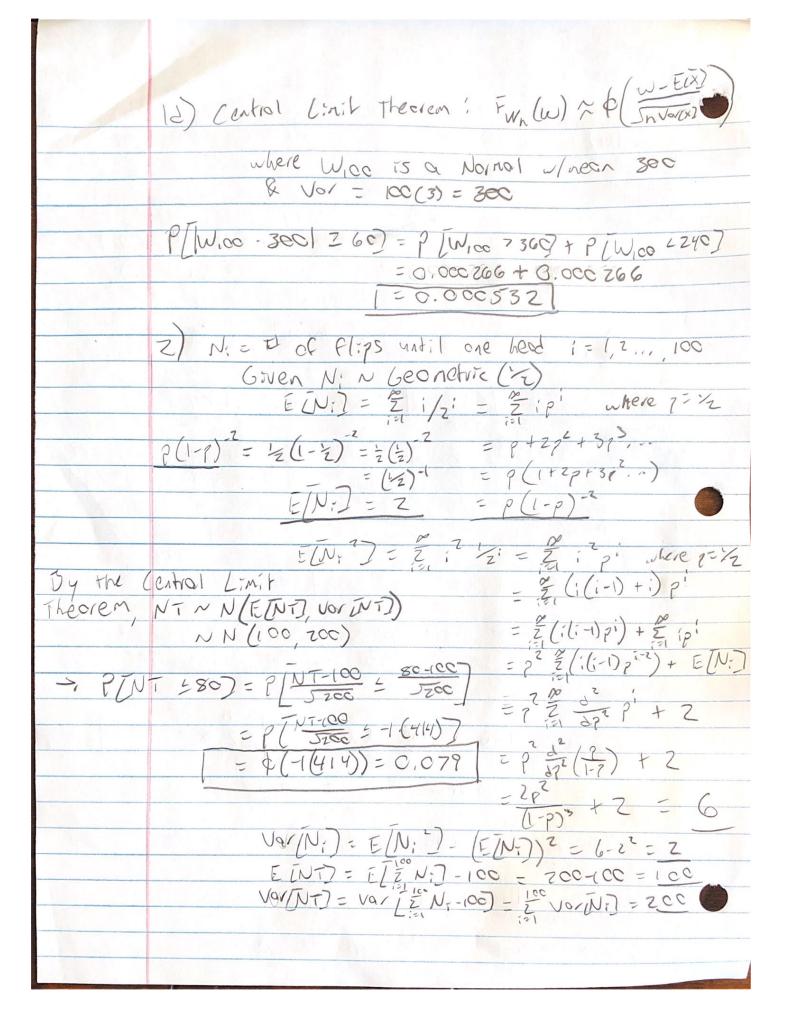
EK381 HW9

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ta) Markou's inequality: PLX ZC) & ELX) -, ?[X 26] = 3/6 = 1/2 P(x26) = 1- (16=0)+16=1)+...+16=51) = 1-0.916082 = 10.08 The upper bound (1/2) > the exact value (0.08)
gatisfying the inequality. b) P(X-EUT) ZC] & Var(X). Clebysler's ? [x-3 27] = P(x25) = 1-(P(xx)+...26=4)) = 1-0.815763 = 0,184 = P(x =0) = P(x=0) + P(x=0) = 0.199 P(x25) + ((x41) = 0.383) The upper bound (3/4) is closer to the exact while (0.383) in the case of chebysher's inequality compared to Markou's inequality c) work can of large Numbers: P/ = ZX: - E(x) 20/2 40/2 work law population moon - sample moon Chebyster's inequality implies P[X-EIX7 | 20] = where - 18 X-EX2 29 = 300 = 0.0833 may serve as the upper bound



3a) P/2 (Xu-p/20) E/4nc2 4n(2 = 0.955, n = 4(0.02) = (0.955) = 654 b) 0.02 7 2 0.5(1-05) => n 7 2500 4a) T. N exponential (x)

E(T:) = 100

1/x = 100 => \lambda = 100 (b([T:] = 1/x2 = 1/400)2 = [10000] E[T] = 1/0000. F[ZT:] = 1/0000.10000.100=[100] c) VITI = (10000)2. V[ZT] = 1/10000)2. 10000 = 1 BY CLT, TNN(ECT) VCT] P[T >110] = P | T-E[T] = 110-100 = P(Z > 10) = 1 - P(Z < 10) = 1 - P(Q)