

STAT 702/J702
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-Lecture 26-

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Today

- Homework Solutions
- CLT and Application
- χ^2 , t, and F

Ch 4 # 67) A fair coin is tossed n times, and the number of heads, N , is counted. The coin is then tossed N more times. Find the expected total number of heads generated by this process.

Question 2: Use R and Monte Carlo Integration (but not the built in normal pdf or cdf) with $n=1000$ to estimate $P(0 < Z < 1)$ (as discussed in example A on page 165). Report the code you used and the results of 10 of your simulations. Compare your finding to the actual value.



Central Limit Theorem: Let X_1, X_2, \dots be a sequence of independent identically distributed random variables with mean μ and variance σ^2 . Then

$$\lim_{n \rightarrow \infty} P \left(\frac{\sum_{i=1}^n X_i - n\mu}{\sqrt{n}\sigma} \leq x \right) = \Phi(x)$$

$-\infty < x < \infty$



Similarly:

$$\lim_{n \rightarrow \infty} P \left(\frac{\bar{X} - \mu}{\sigma/\sqrt{n}} \leq x \right) = \Phi(x)$$

$-\infty < x < \infty$


