3342 Review: Chapters 4 - 5.3

Terms and Representative Problems

Chapter 4

random variable
probability distribution 2-5
$f(x) \geq 0$
$\sum_{\text{all } x} f(x) = 1$
discrete random variable
continuous random variable
probability histogram
cumulative distribution function

binomial distribution 13-20
two outcomes per trial
p(success) same for all trials
fixed number, n, of trials
trials are independent
binomial distribution function
b(x;n,p) 7
cumulative binomial distribution function
B(x;n,p)
symmetric
positively skewed
negatively skewed

hypergeometric distribution 22-27
sampling without replacement
hypergeometric distribution function
h(x;n,a,N)

mean 30, 32
binomial 38-39
hypergeometric
variance and standard deviation 30, 32
binomial
hypergeometric
kth moment about the origin
alternate formula for variance 31, 33

Chebyschev's Theorem 44-45
law of large numbers

Poisson distribution 54-57
mean and variance
approximation to binomial 52-53
Poisson process 63-65

geometric distribution 60, 62
mean and variance
multinomial distribution 70, 72
mean and variance

Chapter 5

probability density function 2, 4, 6, 9-10
$f(x) \geq 0$
$\int_{-\infty}^{\infty} f(x)\,dx = 1$
distribution function 5
kth moment about the origin
mean, variance and standard deviation 13-14

normal distribution 24, 27, 29, 31, 33
mean and variance
standard normal distribution 19-21
Table 3
standardized random variable

normal approximation to binomial 35-39
continuity correction