**Statistics Formula Sheet – Project 2**

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**3.7 Hypergeometric Probability Distributions**

Hypergeometric Formula:

Expected Value:

Variance:

Standard Deviation:

**3.8 Poisson Probability Distributions**

Poisson Formula:

Expected Value:

Variance:

Standard Deviation:

**3.11 Chebyshev’s Theorem**

OR

* Lower Interval Bound =
* Upper Interval Bound =

**4.2 Probability Distribution for a Continuous Random Variable**

Distribution Function:

*Properties*

Probability Density Function:

*Properties*

Probability of Y in an Interval [a, b]:

**4.3 Expected Values for Continuous Random Variables**

Expected Value of a Continuous Random Variable:

Expected Value of a Function of a Continuous Random Variable:

*Properties*

**4.4 The Uniform Probability Distribution**

Uniform Distribution: 0, elsewhere

Probability of Y in an Interval [a, b]:

* Formula taken from class notes

Expected Value for a Uniform Distribution:

Variance for a Uniform Distribution:

Standard Deviation for a Uniform Distribution:

**5.2 Bivariate and Multivariate Probability Distributions**

Bivariate Probability Function:

*Properties*

Bivariate Distribution Function:

*Properties*

If

and are jointly continuous random variables if there exists a nonnegative function such that, for all

*Properties*

**5.3 Marginal and Conditional Probability Distributions**

Marginal Probability Function:

&

Marginal Density Function:

&

Conditional Discrete Probability Function:

,

provided that

Conditional Distribution Function:

Conditional Density Function:

, provided that

, provided that

**5.4 Independent Random Variables**

Distribution Function Independence:

and are *independent* if and only if, for all

Joint Probability Function Independence:

and are *independent* if and only if, for all

Joint Density Function Independence:

and are *independent* if and only if, for all

Joint Density Function Independence Using Functions of and :

and are *independent* if and only if, where is a nonnegative function of alone and is a nonnegative function of alone

***Expected Value, Variance, and Standard Deviation of Probability Distributions***

|  |  |  |  |
| --- | --- | --- | --- |
| **Probability Distribution** | **Expected Value** | **Variance** | **Standard Deviation** |
| Hypergeometric |  |  |  |
| Poisson |  |  |  |
| Uniform |  |  |  |