**Project 2 Formula Sheet**

**Probability Distribution Function (Def 4.1):**

for

**Properties of Distribution Functions (Theorem 4.1):**

1. is a nondecreasing function of y. [If and are *any* values such that , then ]

**Probability Density Function (Def 4.3):**

and it follows that

**Properties of Density Functions (Theorem 4.2):**

1. for all y,

**Probability Between Intervals (Theorem 4.3):**

**Expected (Continuous Random Variables) (Def 4.5):**

provided the that the integral exists

**Expected of a Function (Theorem 4.4):**

**Expected of Function Rules (Theorem 4.5):**

**Variance (Continuous Random Variables) (Example 4.6):**

**Uniform Distribution (Def 4.6):**

* **Expected:**
* **Variance:**

**Bivariate (Joint) Distributions (Def 5.1):**

or

**Joint Mass Function Properties (Theorem 5.1):**

1. for all
2. where the sum is over all values that are assigned nonzero probabilities

**Bivariate Distribution Function (Def 5.2):**

**Marginal Probability Functions (Def 5.4):**

and

**Marginal Density Functions (Def 5.4):**

and

**Conditional Discrete Probability (Def 5.5):**

**Conditional Distribution Function (Def 5.6):**

**Conditional Density Function (Def 5.7):**

or