

## Math 213 Discussion Worksheet - Week 14

1. Two coins are tossed. Let random variable  $x$  be the number of tails.
  - (1) What is the sample space for  $x$ ?
  - (2) What is the probability that  $x = 1$ ?
  - (3) What is the expected value of  $x$ ?
  - (4) What is the variance of  $x$ ?
  - (5) What is the standard deviation of  $x$ ?
  
2. Suppose random variable  $x$  has probability density function  $f(x)$ . Find the mean and variance of  $x$ .
  - (1)  $f(x) = 1, -\frac{1}{2} < x < \frac{1}{2}$ .
  - (2)  $f(x) = \frac{1}{2\sqrt{x}}, 0 < x < 1$ .
  - (3)  $f(x) = e^{-x}, 0 < x < \infty$ .

**1.**

(1)  $\{0, 1, 2\}$

(2)  $\frac{1}{2}$

(3) 1

(4)  $\frac{1}{2}$

(5)  $\frac{1}{\sqrt{2}}$

**2.**

(1)  $\mu = 0, V = \frac{1}{12}$

(2)  $\mu = \frac{1}{3}, V = \frac{4}{45}$

(3)  $\mu = 1, V = 1$