1. Suppose you have a 6-sided die with side labels 1, 2, 2, 4, 4, and 5. Consider the (discrete) random variable $x$ that counts the number of even values that occur when rolling it twice.

(a) Identify all possible outcomes in the sample space, and find the probability of each.

(b) Find the expected value (i.e. mean), variance, and standard deviation of $x$.

2. Let $x$ be a continuous random variable with probability density function 

$$f(x) = k \sin(x)$$

for $0 \leq x \leq \pi$.

(a) Find a value of $k$ so that $f$ is a probability density function.

(b) Find the expected value (i.e. mean), median, variance, and standard deviation of $f$. 