

CS 333202: Probability and Statistics
HW8 Part I

1. A point is chosen at random on a line segment of length L . Interpret this statement and find the probability that the ratio of the shorter to the longer segment is less than $\frac{1}{4}$.
2. Let X be a random variable with probability density function

$$f(x) = \frac{1}{2}e^{-|x|}, -\infty < x < \infty$$

Calculate $\text{Var}(X)$.

3. Let X be a random number from $(0, 1)$. Find the probability density function of $Y = 1/X$.