

Simulation Lab(MC503)

Assignment 6

Try to solve all the problems

1. Generate some data like $X = (1, 3, 4, 2, 6, 7, 5, 8)$, $Y1 = 2X$ and $Y2 = 2.5X$ in R . Draw a plot between X vs. $Y1$ and X vs. $Y2$ in a single graph and then add a legend to show the two different line.
2. Draw a curve of $y = 1/x$ by generating a sequence of x and also draw two straight line passes through $(0,0)$ in same graph.
3. Using bernoulli trials, generate a sequence of $(0,1)$ of size 100 and count the length of 0 and 1.
4. Apply probability Integral transform to generate 1000 samples from the given distribution You can take any specific value of the parameters. Find the mean and variance from each of the generated sample. Also, add legend and plot graph of PDF of each distribution for the generated samples.

*Here, you are not supposed to use R packages.

- i. Exponential distribution $f(x) = (1/\sigma) \exp(-(x - \mu)/\sigma); x \geq \mu, \sigma > 0$.
- ii. Cauchy distribution $f(x) = \frac{\sigma}{\pi(\sigma^2 + x^2)}, x \in \mathbb{R}, \sigma > 0$.
- iii. Burr XII distribution $f(x) = 1 - (1 + x^c)^{-k}; x > 0, c > 0, k > 0$.

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