

You must show **all** work to receive full credit. All work is to be your own.

Due April 11

Upload to BlackBoard a single correctly running .m file

20% penalty for noncompliance

1. The purpose of this assignment is to get familiar with the acceptance-rejection method for generating a random variable with a prescribed pdf.
2. Let $\eta = \int_{\mathbb{R}} f(x) dx$ be the normalizing constant for

$$f(x) = \begin{cases} 3 & \text{if } -1 \leq x \leq -0.997 \\ 1 - \sqrt[4]{|x|} & \text{if } -0.997 < x \leq 1 \\ 0 & \text{otherwise} \end{cases}$$

And let the *prescribed* pdf be given by $p(x) = \frac{1}{\eta}f(x)$. Use MATLAB to “sample” from the prescribed pdf, with $N = 100000$ total samples (rejected and accepted), and $\Delta x = \frac{1}{1000}$, that is the support of the prescribed pdf is $x = [-1:1/1000:1]$;

80 points

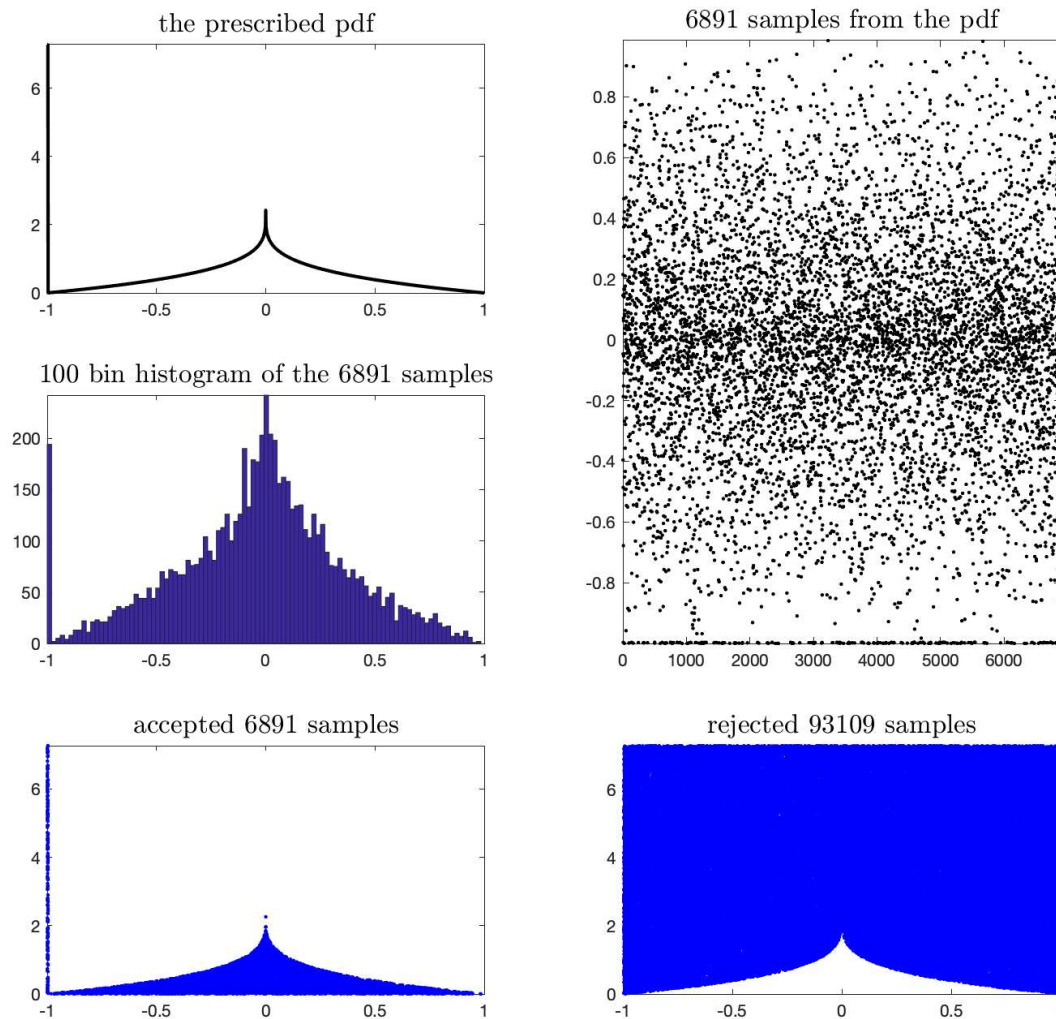


Figure 1: Results of Accept-Reject method for the pdf $p(x) = \frac{1}{\eta}f(x)$.