

For Laplace part :

Code - ques1_laplace.m

In the program m represents the location parameter and b represents the scale parameter.

n represents the total no of points considered to plot the graph.

For plotting of graph , I have considered the range of x from -25 to 25 and n points in this range

In variable y , I have stored the PDF for laplace and similarly in variable z , I have stored the CDF for Laplace.

The variable E_x stores the expectation value $E[x]$ and E_x2 stores the expectation value $E[x^2]$

So variance = $E[x^2] - (E[x])^2$

Then in fig1 , I plot the PDF and in fig 2 , I plot the CDF

The PDF plot is stored with the name laplace_PDF.png

The CDF plot is stored with the name laplace_CDF.png

The approximate variance calculated is printed on screen

Actual variance = $2b^2 = 8$

Approx variance = 7.9963

For Gumbel part :

Code - ques1_gumbel.m

In the program m represents the location parameter and b represents the scale parameter.

n represents the total no of points considered to plot the graph.

For plotting of PDF , I have considered the range of x from -15 to 25 and n points in this range

For plotting of CDF , I have considered the range of w from -5 to 20 and n points in this range

In variable y , I have stored the PDF for gumbel and similarly in variable z , I have stored the CDF for gumbel.

The variable E_x stores the expectation value $E[x]$ and E_x2 stores the expectation value $E[x^2]$

So variance = $E[x^2] - (E[x])^2$

Then in fig1 , I plot the PDF and in fig 2 , I plot the CDF

The PDF plot is stored with the name gumbel_PDF.png

The CDF plot is stored with the name gumbel_CDF.png

The approximate variance calculated is printed on screen

Actual variance = $b^2\pi^2 / 6 = 6.5797$

Approx variance = 6.5759

For Cauchy part :

Code - ques1_cauchy.m

In the program m represents the location parameter and g represents the scale parameter.

n represents the total no of points considered to plot the graph.

For plotting of graph , I have considered the range of x from -5 to 5 and n points in this range

In variable y , I have stored the PDF for cauchy and similarly in variable z , I have stored the CDF for cauchy.

Then in fig1 , I plot the PDF and in fig 2 , I plot the CDF

The PDF plot is stored with the name cauchy_PDF.png

The CDF plot is stored with the name cauchy_CDF.png

Here variance cannot be calculated as it is not finite.