EN 2040

Random Signals and Processes

Simulation Assignment

Report

Logo

Description automatically generated

H.K.R.L. GunaSEKARA

180205H

Chart

Description automatically generatedQ3)

Chart

Description automatically generated

Chart, bar chart

Description automatically generated

Q4)

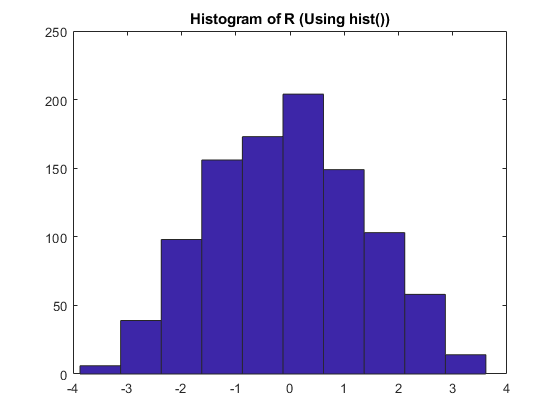
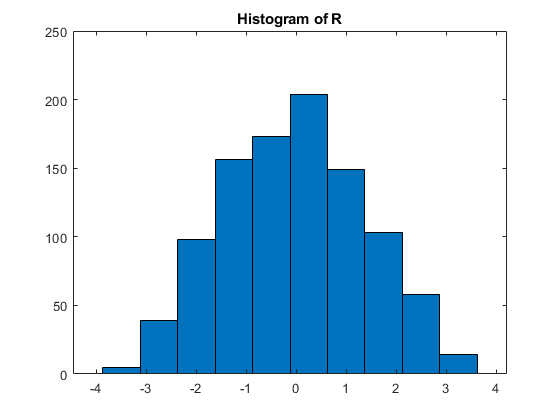
Chart, bar chart, surface chart

Description automatically generated

Chart

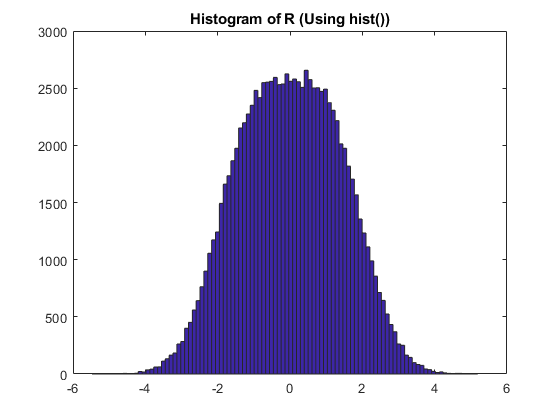
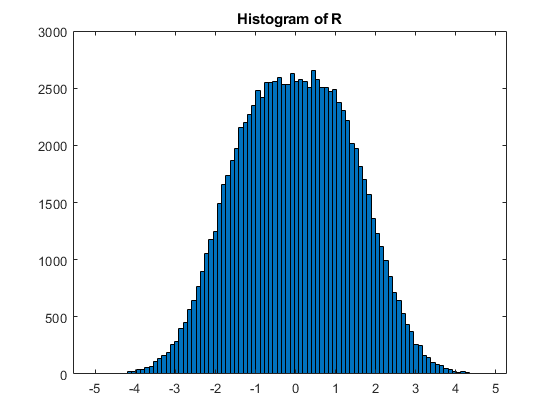
Description automatically generated

Q5)



The histograms have a distant appearance of Gaussian distribution.

a)



Upon increasing the no of bins, histograms have a close look of Gaussian distribution.

b)

Chart, histogram

Description automatically generated

Chart, histogram

Description automatically generated

Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated

Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated

When A increases the pdfs deviates from its initial positions when A=1.

This is due to mean values of the pdfs is -A for and A for

c)

|  |  |  |  |
| --- | --- | --- | --- |
| A | E [R|S = A] | E [R|S = -A] | E [R] |
| 1 | 1.0025 | -1.0017 | 0.003864 |
| 2 | 1.9976 | -2.0006 | -0.0012 |
| 3 | 3.0006 | -3.0068 | -0.0029 |

d)

Chart, histogram

Description automatically generated

Chart, histogram

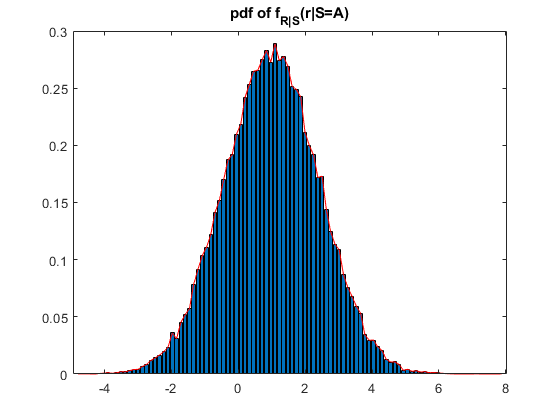
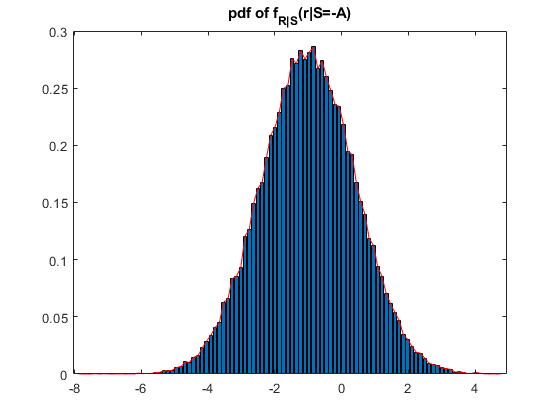
Description automatically generated

Chart, histogram

Description automatically generated

Q6)

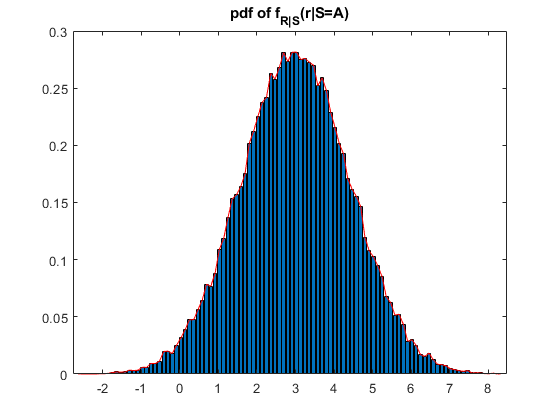
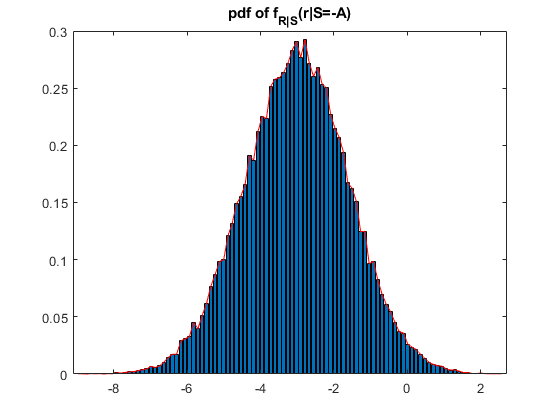
b)



Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated



c)

|  |  |  |  |
| --- | --- | --- | --- |
| A | E [R|S = A] | E [R|S = -A] | E [R] |
| 1 | 0.9965 | -0.9965 | -0.000091 |
| 2 | 2.0001 | -2.0088 | -0.0044 |
| 3 | 2.999 | -3.0159 | -0.0081 |

d)

Chart, histogram

Description automatically generated

Chart, histogram

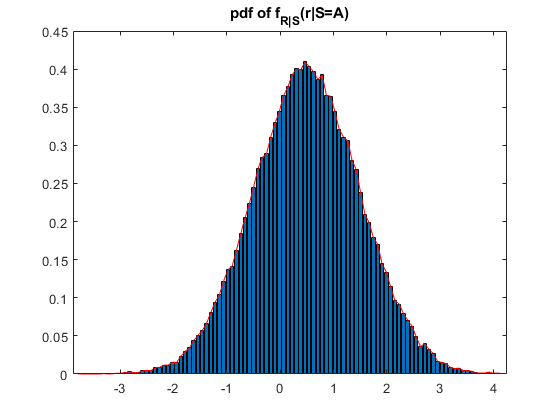
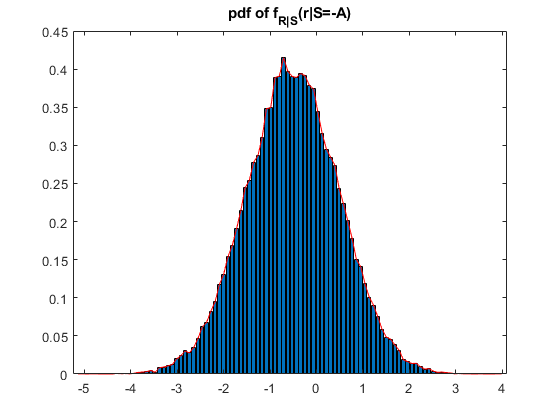
Description automatically generated

Chart, histogram

Description automatically generated

Q7)

b)



Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated

Chart, histogram

Description automatically generatedChart, histogram

Description automatically generated

c)

|  |  |  |  |
| --- | --- | --- | --- |
| α | E [R|S = A] | E [R|S = -A] | E [R] |
| 0.5 | 0.5011 | -0.5090 | -0.0038 |
| 2 | 1.9994 | -2.0056 | -0.0031 |
| 3 | 2.9899 | -2.9972 | -0.0035 |

d)

Chart, histogram

Description automatically generated

Chart, histogram

Description automatically generated

Chart, histogram

Description automatically generated