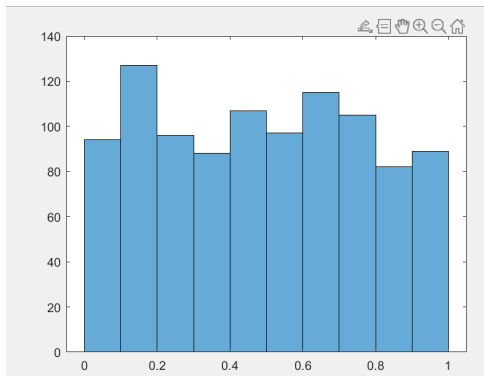
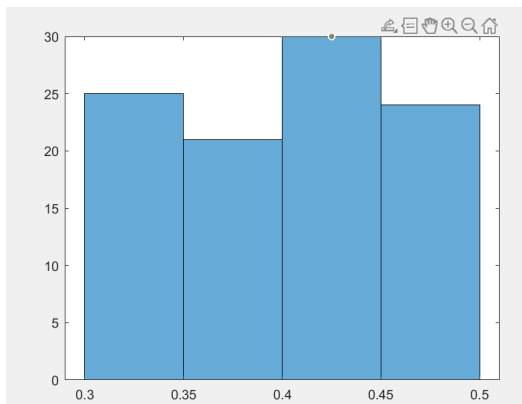


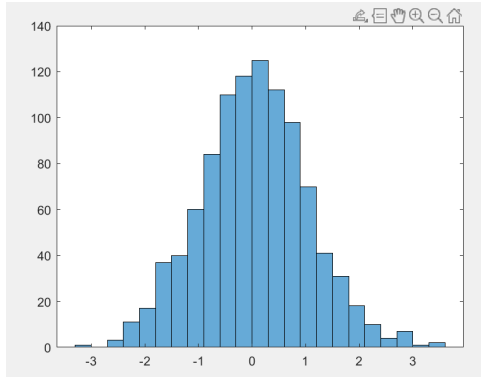
- 1) Question 1 entails using the rand function in MatLab and creating a uniformly distributed sample with numbers between 0 and 1. I first initialized the variables I needed which were the min (0) and max (1). Then, using the rand function I was able to generate 1000 uniformly distributed values. Lastly, plotting the histogram gives the following graph.



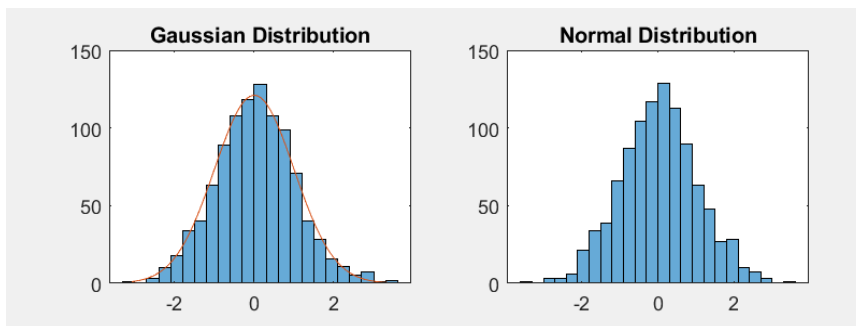
- 2) For question 2, I obtained 100 uniformly-distributed samples between 0.3 and 0.5 by initializing the min and max values. Then, using the rand function, I was able to plot the histogram. The following histogram graph is depicted below.



- 3) I initialized the mean and standard deviation of 0 and 1 respectively. Then using the randn function, I was able to generate 1000 normally distributed samples. The histogram plotted is below showing a bell-curve histogram.



- 4) For this question, I plotted the Gaussian Curve over the histogram to show that both figures follow gaussian distribution. I initialized the variables and used the subplot functions to have both Question 3 and Question 4 on the same figure graph. Then, I used matlab functions such as binwidth and linspace to get the Gaussian curve printed on top of the histogram. Lastly, I have another subplot printed showing the normal distribution. Both figures follow the gaussian distribution and have a bell-curve trend.



- 5) There were multiple parts for this question. The approach I took for this question is to first create a rectangle with bounds from 0 to 4 on both x, y axis. Then, I created a piecewise function with the bound ranges of X. Lastly, I used the plot and color functions to plot the red and blue dots. Above the staircase had to be red dots, while below had to be blue. For the last part, I created a separate histogram with only the blue dots to depict the staircase functionality values.

