**STU22004 – Lab 4 Instruction**

As discussed in lecture, for a Normal distribution the probability of is given by:

R has four in-built functions to generate Normal distribution. They are described below.

1. **pnorm**

This function gives the cumulative probability of .

pnorm(x, mean, sd)

1. **qnorm**

This function takes the probability and returns the value (i.e. which its cumulative probability value matches the given probability p.

qnorm(p, mean, sd)

1. **rnorm**

This function generates required number of random samples (size) of given Normal distribution with known .

rnorm(size, mean, sd)

Now, you are required to answer the following questions:

1. For a Normal random variable with and , find:
2. Find the 90th, 95th and 99th percentile of a Normal distribution when and .
3. Generate 10,000 random samples from a Normal distribution with and . Plot the histogram of your samples. What do you think about the Mode of this distribution? Find the Mode and Median of the samples.