

Excercise 3

In this excersie we will explore the normal distribution

1.
 - a. Sample 1000 points from the normal distribution with mean 5, and standard deviation 2.
 - b. plot a histogram of them.
 - c. compare the distribution to a normal distribution.
2.
 - a. Sample 10000 pairs of points from a normal distribution, with mean 5 and standard deviation 2. x and y
 - b. Make a 2D density plot of these pairs, with bin size 0.5 - i.e. how many of the pairs fall between 0.5 to 1.0 in x, and 0.5 to 1.0 in y. How many 0.5 to 1.0 in x and 1.0 to 1.5 in y, etc. etc. You can use the funtions `image`, `round`, `cut` or possibly functions from the package `lattice`.
 - c. For each pair, calculate the mean value.
 - d. Do an x-y plot of the difference between x and the mean, vs. y minus the mean.
 - e. Draw a histogram of $(x-\text{mean})^2$
3. Do the same as in 2., but with 3 variables (but plot only x and y).
4.
 - a. Calculate the 10x10 multiplication table.
 - b. Plot it as an image.
 - c. Plot an image with a seperate square for each digit.