# Exercise 1

**f.m:**

function y = f(x)

y = x^2;

end

A white rectangular object with a black border

Description automatically generated

# Exercise 2

**Plot\_f.png**

x = -10:0.1:10;

y = x.^2;

plot(x, y);

title('Plot of f(x) = x^2');

xlabel('x');

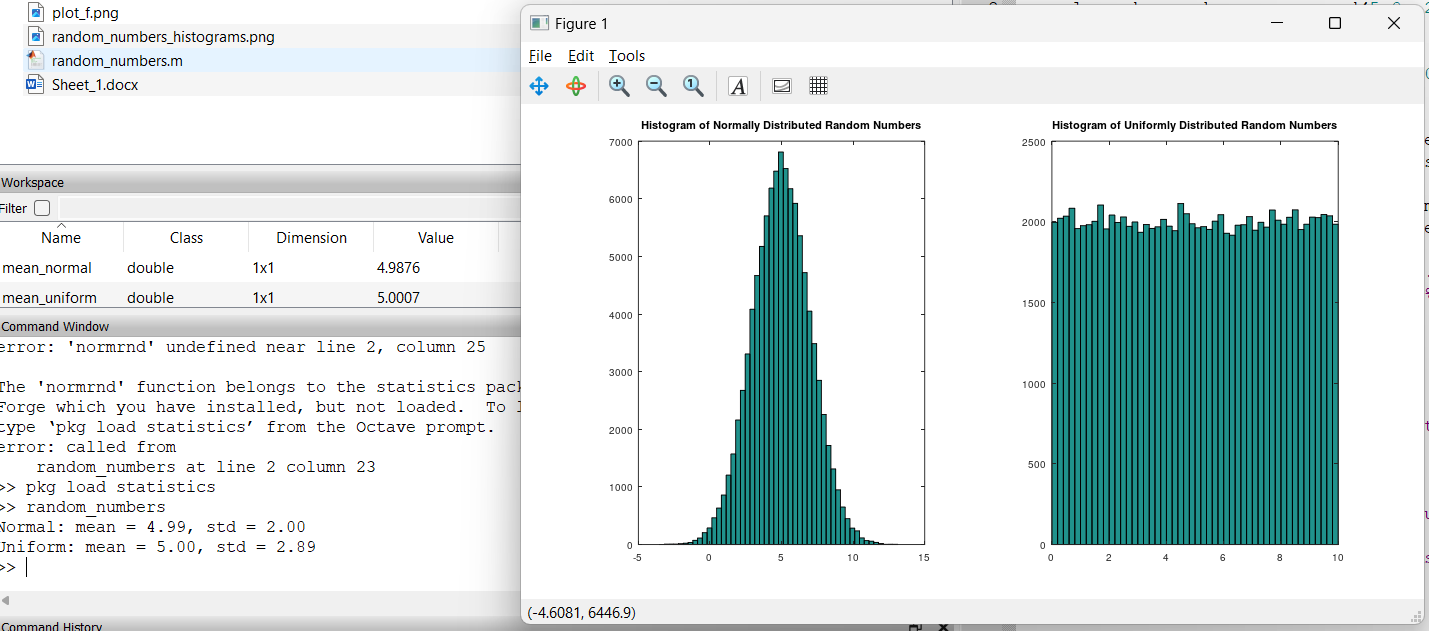
ylabel('f(x)');

saveas(gcf, 'plot\_f.png');

A graph of a function

Description automatically generated

# Exercise 3



A screenshot of a computer

Description automatically generated

**random\_numbers.m**

% Part a

normal\_random\_numbers = normrnd(5.0, 2.0, [1, 100000]);

% Part b

uniform\_random\_numbers = rand(1, 100000) \* 10;

% Part c

mean\_normal = mean(normal\_random\_numbers);

std\_normal = std(normal\_random\_numbers);

mean\_uniform = mean(uniform\_random\_numbers);

std\_uniform = std(uniform\_random\_numbers);

fprintf('Normal: mean = %.2f, std = %.2f\n', mean\_normal, std\_normal);

fprintf('Uniform: mean = %.2f, std = %.2f\n', mean\_uniform, std\_uniform);

% Part d

figure;

subplot(1, 2, 1);

hist(normal\_random\_numbers, 50);

title('Histogram of Normally Distributed Random Numbers');

subplot(1, 2, 2);

hist(uniform\_random\_numbers, 50);

title('Histogram of Uniformly Distributed Random Numbers');

saveas(gcf, 'random\_numbers\_histograms.png');