Questions 2-6

(2)

pi\_power\_term = @(index) (-3)^(-index) / (2 \* index + 1);

current\_estimate = 1;

current\_sum = 0;

k = 0;

last\_term = 1;

while abs(last\_term / current\_estimate) >= 10 ^ -8

last\_term = pi\_power\_term(k);

current\_sum = current\_sum + pi\_power\_term(k);

k = k + 1;

current\_estimate = sqrt(12) \* current\_sum;

end

fprintf('Pi estimation: %.8f\n', current\_estimate)

(3)

%% making data and graph

x\_values = 0:0.02:3.14;

y\_values = sin(x\_values);

disp(y\_values)

sin\_line = plot(x\_values, y\_values);

%% adding labels

xlabel('x values')

ylabel('y values')

title('y = sin(x)')

(4)

x\_values = 0:0.02:3.14;

sin\_values = sin(x\_values);

cos\_values = cos(x\_values);

sin\_line = plot(x\_values, sin\_values);

hold on;

cos\_line = plot(x\_values, cos\_values);

xlim([0, 3.14])

xlabel('x values')

ylabel('y values')

title('y = sin(x) and y = cos(x)')

legend('y = sin(x)', 'y = cos(x)')

(5)

syms x

f = x ^ 2 + 9 \* x + 8;

factored\_f = factor(f);

disp(factored\_f)

(6)

syms a b x

f = 1 / (a^2 + b^2 \* x^2);

dfdx = int(f, x);

disp(dfdx)