**EGN3204 — Engineering Software Tools**

**Pensacola (82151) Section, Fall 2014**

**Problem Set #10 (October 30th, 2014 Lecture)**

**(Word, Matlab R2013a)**

James Davis

1. The matlab code for problems 1 is given in Figure 1 and the output for problems 1 is given in Figure 2 and 3 respectively.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 1, Project 10

clear all;

clc;

load('data/matlab\_301014\_230pm\_ac.mat');

load('data/matlab\_301014\_230pm\_d.mat');

load('data/matlab\_301014\_230pm\_ej.mat');

load('data/matlab\_301014\_230pm\_ko.mat');

load('data/matlab\_301014\_230pm\_ps.mat');

load('data/matlab\_301014\_230pm\_tz.mat');

%outputting maxima and locations

[maxima,locations] = findpeaks(dependent);

%plotting the figures

figure (1)

plot(independent,dependent,'k-',independent(locations),maxima,'bo-','LineWidth',2);

title('Plot by James Davis');

xlabel('independent');

ylabel('dependent');

grid on;

%printing data

max\_data(1,:) = maxima;

max\_data(2,:) = independent(locations);

fprintf('One maxima is %f and its x location is %f\n',max\_data);

**Figure 1**. The code for problem 1



**Figure 2.** The graph output for problem 1

One maxima is 7.524442 and its x location is -2.570000

One maxima is 2.335033 and its x location is -0.190000

One maxima is 7.316681 and its x location is 2.620000

One maxima is 5.486717 and its x location is 4.550000

**Figure 3.** The matlab output for problem 1

2. The matlab program for problem 2 is given in Figure 4. The output for the given variables is shown in Figure 5.

%James Davis, EGN3204, Fall 2014

% MATLAB m file for problem 2, Project 10

clear all;

clc;

monthly = input('Enter monthly electricity usage in kW: ');

days = input('Enter days in billing cycle: ');

if(monthly <= 200)

charge = monthly \* 0.11;

elseif(monthly <= 500)

charge = (200 \* 0.11)+((monthly - 200)\*0.17);

else

charge = ((monthly-500) \* 0.29) + 200\*0.11 + 300\*0.17;

end

charge = charge + (days\*0.5);

charge = (charge\*0.08) + charge;

fprintf('%dkWh in a %d billing period charges $%.2f\n',monthly,days,charge);

**Figure 4.** The matlab m file for problem 2.

**i.**

Enter monthly electricity usage in kW: 0

Enter days in billing cycle: 33

0kWh in a 33 billing period charges $17.82

**ii.**

Enter monthly electricity usage in kW: 123

Enter days in billing cycle: 30

123kWh in a 30 billing period charges $30.81

**iii.**

Enter monthly electricity usage in kW: 333

Enter days in billing cycle: 29

333kWh in a 29 billing period charges $63.84

**iv.**

Enter monthly electricity usage in kW: 767

Enter days in billing cycle: 32

767kWh in a 32 billing period charges $179.74

**Figure 5.** The selected outputs for the program in Figure 4.