# **Exercise 1:**

**Code**:

x = [0, 2, 3, 4, 6, 8];

y = [2, 5, 7, 17, 7, 0];

plot(x,y);

axis equal;

**Explanation:**

Simply used code provided.

**Plot:**

Provided separately. Named **graph1lab4.pdf.**

# **Exercise 2:**

**Code**:

v = [2, 3, 4, 2, 6];

w = [5, 12, 8, 6, 7];

% disp("v\*w");

% disp(v\*w);

disp("v.\*w")

disp(v.\*w);

disp("v.^w")

disp(v.^w);

disp("v./w")

disp(v./w);

**Explanation:**

v\*w is used for matrix multiplication and hence does not work on vectors of same dimensions.

v.\*w is used for element wise multiplication.

v.^w is used to raise each element of v to w power.

v./w is used for element wise division.

# **Exercise 3:**

**Code**:

a = [0 1 2 3 4 5];

b = a.^3-9\*a.^2+18\*a;

plot(a,b);

**Explanation:**

Plot created is using the vector with few discrete numbers and plotting the numbers generated.

**Plot:**

Provided separately. Named **graph2lab4.pdf.**

# **Exercise 4:**

**Code**:

c=(0:0.1:5);

d=c.^3-9\*c.^2+18\*c;

plot(c,d);

c,d;

**Explanation:**

The second graph appears smoother because it has more data points generated with smaller intervals, resulting in smoother interpolation between points compared to the first graph, which has fewer data points.

**Plot:**

Provided separately. Named **graph3lab4.pdf.**

# **Exercise 5:**

**Code**:

d = [0, 2, 4, 5, 6, 8];

f = [0, 20, 30, 50, 70, 100];

plot(d,f,"r:p");

% plot(d,f,"b:s");

**Explanation:**

Just used the commands provided

**Plot:**

Provided separately. Named **graph4lab4.pdf.**

# **Exercise 6:**

**Code**:

d = [0, 2, 4, 5, 6, 8];

f = [0, 20, 30, 50, 70, 100];

plot(d,f,"b:p");

xlabel("Dog years");

ylabel("Human years");

title("The passage of time");

**Explanation:**

Titles and graph axis became labelled.

**Plot:**

Provided separately. Named **graph5lab4.pdf.**

# **Exercise 7:**

**Code**:

b = [1, 1, 1, 1, 1, 1; 0, 2, 4, 5, 6, 8];

c = [1, 0; 1, 2; 1, 4; 1, 5; 1, 6; 1, 8];

d = [0; 20; 30; 30; 50; 100];

A = b\*c;

Ainv = inv(A);

E = Ainv\*b;

F = E\*d;

k = F(1);

m = F(2);

xcorrd = [0, 2, 4, 5, 6, 8];

ycorrd = [0; 20; 30; 30; 50; 100];

d=k+m\*xcorrd;

plot(xcorrd,ycorrd,"r:p",xcorrd,d);

**Explanation:**

I multiplied the left two matrices together. Then, found the inverse of the product, and multiplied to the right sight of the equation.

**Plot:**

Provided separately. Named **graph6lab4.pdf.**