Edward Venator

EECS 304 Lab 1

Problem 1

1.1

x1 = -147.6667

x2 = 288.2531

x3 = 107.3148

x4 = -66.9568

1.2

Eigenvalues of A:

12.1240

-3.2872

2.5995

1.5637

Condition of A: 10.1883

Problem 2

2.1

11.7473

2.7028

-1.2251 + 1.4672i

-1.2251 - 1.4672i

2.2

x5 + 7x4 – 28x3 – 4x2 + 579x - 1755

2.3

P1 + P2 = 2x3 + 6x2 +12x + 20

P1 - P2 = - 2x2 -6x - 12

P1 \* P2 = x6 + 6x5 + 20x4 + 50x3 + 75x2 + 84x + 64

dP1/dt = 3x2 + 4x + 3

Problem 3

2nd order : -9.8147 20.1338 -0.0327

3rd oder: 16.0956 -33.9580 29.3404 -0.6121

10th order:

1.0e+006 \*

-0.4644 2.2968 -4.8781 5.8244 -4.2957 2.0216 -0.6034 0.1090 -0.0106 0.0004 -0.0000



Code:

%Edward Venator

%EECS 304 Lab 1

%Problem 1

%1.1

A = [

1 2 3 5

4 5 1 2

7 5 1 2

2 3 1 6

];

b = [

416

824

381

275

];

x = eye(4) / A \* b

%1.2

eig(A)

cond(A)

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%Problem 2

%2.1

p = [1 -12 0 25 116];

roots(p)

%2.2

r = [2+3\*i 2-3\*i -5 3 -9];

poly(r)

%2.3

p1 = [1 2 3 4];

p2 = [1 4 9 16];

p1 + p2

p1 - p2

conv(p1, p2)

polyder(p1)

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%Problem 3

%3.1

x = [0 0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1];

y = [-0.45 1.98 3.28 6.16 7.08 7.34 7.66 9.56 9.48 9.30 11.20];

p2 = polyfit(x, y, 2)

p3 = polyfit(x, y, 3)

p10 = polyfit(x, y, 10)

figure(1);

plot(x,y,'b\*');

hold on;

plot(x,polyval(p2,x),'r');

plot(x,polyval(p3,x),'g');

plot(x,polyval(p10,x),'k');

hold off;