**shortProblems.m:**

% exercise 1:

a=10

b=2.5\*10^23

c=2+3i

d=exp((1i\*2\*pi)/3)

% exercise 2:

aVec=[3.14 15 9 26]

bVec=[2.71; 8; 28; 182]

cVec=(5: -0.2: -5)

dVec=logspace(0, 1, 101)

eVec='Hello'

% exercise 3:

aMat=2\*ones(9)

%bMat=zeros(9);

bMat=diag([1 2 3 4 5 4 3 2 1])

cMat=reshape((1:1:100), 10, 10)

dMat=NaN(3, 4)

eMat=[13 -1 5; -22 10 -87]

%fMat=randi([-3, 3], [5, 3]);

fMat=ceil(-4+7.\*rand(5, 3))

% exercise 4:

x=1/(1+exp(-(a-15)/6))

y=(sqrt(a)+b^(1/21))^pi

z=log(real((c+d)\*(c-d))\*sin(a\*pi/3))/(c\*conj(c))

% exercise 5:

xVec=exp((-cVec.^2)./(2\*2.5^2))/(sqrt(2\*pi\*2.5^2))

yVec=sqrt((aVec'.^2)+(bVec.^2))

zVec=log10(1./dVec)

% exercise 6:

xMat=(aVec\*bVec)\*aMat^2

yMat=bVec\*aVec

zMat=det(cMat)\*(aMat\*bMat)'

% exercise 7:

cSum=sum(cMat, 1)

eMean=mean(eMat, 2)

eMat(1,:)=[1 1 1]

cSub=cMat(2:9, 2:9)

lin=(1:1:20)

lin([2:2:20])=[-2:-2:-20]

r=rand(1, 5)

r(find(r<0.5))=0

**eredmények:**

a =

10

b =

2.5000e+023

c =

2.0000 + 3.0000i

d =

-0.5000 + 0.8660i

aVec =

3.1400 15.0000 9.0000 26.0000

bVec =

2.7100

8.0000

28.0000

182.0000

cVec =

Columns 1 through 11

5.0000 4.8000 4.6000 4.4000 4.2000 4.0000 3.8000 3.6000 3.4000 3.2000 3.0000

Columns 12 through 22

2.8000 2.6000 2.4000 2.2000 2.0000 1.8000 1.6000 1.4000 1.2000 1.0000 0.8000

Columns 23 through 33

0.6000 0.4000 0.2000 0 -0.2000 -0.4000 -0.6000 -0.8000 -1.0000 -1.2000 -1.4000

Columns 34 through 44

-1.6000 -1.8000 -2.0000 -2.2000 -2.4000 -2.6000 -2.8000 -3.0000 -3.2000 -3.4000 -3.6000

Columns 45 through 51

-3.8000 -4.0000 -4.2000 -4.4000 -4.6000 -4.8000 -5.0000

dVec =

Columns 1 through 11

1.0000 1.0233 1.0471 1.0715 1.0965 1.1220 1.1482 1.1749 1.2023 1.2303 1.2589

Columns 12 through 22

1.2882 1.3183 1.3490 1.3804 1.4125 1.4454 1.4791 1.5136 1.5488 1.5849 1.6218

Columns 23 through 33

1.6596 1.6982 1.7378 1.7783 1.8197 1.8621 1.9055 1.9498 1.9953 2.0417 2.0893

Columns 34 through 44

2.1380 2.1878 2.2387 2.2909 2.3442 2.3988 2.4547 2.5119 2.5704 2.6303 2.6915

Columns 45 through 55

2.7542 2.8184 2.8840 2.9512 3.0200 3.0903 3.1623 3.2359 3.3113 3.3884 3.4674

Columns 56 through 66

3.5481 3.6308 3.7154 3.8019 3.8905 3.9811 4.0738 4.1687 4.2658 4.3652 4.4668

Columns 67 through 77

4.5709 4.6774 4.7863 4.8978 5.0119 5.1286 5.2481 5.3703 5.4954 5.6234 5.7544

Columns 78 through 88

5.8884 6.0256 6.1660 6.3096 6.4565 6.6069 6.7608 6.9183 7.0795 7.2444 7.4131

Columns 89 through 99

7.5858 7.7625 7.9433 8.1283 8.3176 8.5114 8.7096 8.9125 9.1201 9.3325 9.5499

Columns 100 through 101

9.7724 10.0000

eVec =

Hello

aMat =

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

2 2 2 2 2 2 2 2 2

bMat =

1 0 0 0 0 0 0 0 0

0 2 0 0 0 0 0 0 0

0 0 3 0 0 0 0 0 0

0 0 0 4 0 0 0 0 0

0 0 0 0 5 0 0 0 0

0 0 0 0 0 4 0 0 0

0 0 0 0 0 0 3 0 0

0 0 0 0 0 0 0 2 0

0 0 0 0 0 0 0 0 1

cMat =

1 11 21 31 41 51 61 71 81 91

2 12 22 32 42 52 62 72 82 92

3 13 23 33 43 53 63 73 83 93

4 14 24 34 44 54 64 74 84 94

5 15 25 35 45 55 65 75 85 95

6 16 26 36 46 56 66 76 86 96

7 17 27 37 47 57 67 77 87 97

8 18 28 38 48 58 68 78 88 98

9 19 29 39 49 59 69 79 89 99

10 20 30 40 50 60 70 80 90 100

dMat =

NaN NaN NaN NaN

NaN NaN NaN NaN

NaN NaN NaN NaN

eMat =

13 -1 5

-22 10 -87

fMat =

-3 1 1

-3 -3 -1

-3 2 1

2 -3 2

3 -3 1

x =

0.3029

y =

6.2696e+003

z =

0.1046

xVec =

Columns 1 through 11

0.0216 0.0253 0.0294 0.0339 0.0389 0.0444 0.0503 0.0566 0.0633 0.0703 0.0777

Columns 12 through 22

0.0852 0.0929 0.1007 0.1083 0.1159 0.1231 0.1300 0.1364 0.1422 0.1473 0.1516

Columns 23 through 33

0.1550 0.1575 0.1591 0.1596 0.1591 0.1575 0.1550 0.1516 0.1473 0.1422 0.1364

Columns 34 through 44

0.1300 0.1231 0.1159 0.1083 0.1007 0.0929 0.0852 0.0777 0.0703 0.0633 0.0566

Columns 45 through 51

0.0503 0.0444 0.0389 0.0339 0.0294 0.0253 0.0216

yVec =

4.1477

17.0000

29.4109

183.8478

zVec =

Columns 1 through 11

0 -0.0100 -0.0200 -0.0300 -0.0400 -0.0500 -0.0600 -0.0700 -0.0800 -0.0900 -0.1000

Columns 12 through 22

-0.1100 -0.1200 -0.1300 -0.1400 -0.1500 -0.1600 -0.1700 -0.1800 -0.1900 -0.2000 -0.2100

Columns 23 through 33

-0.2200 -0.2300 -0.2400 -0.2500 -0.2600 -0.2700 -0.2800 -0.2900 -0.3000 -0.3100 -0.3200

Columns 34 through 44

-0.3300 -0.3400 -0.3500 -0.3600 -0.3700 -0.3800 -0.3900 -0.4000 -0.4100 -0.4200 -0.4300

Columns 45 through 55

-0.4400 -0.4500 -0.4600 -0.4700 -0.4800 -0.4900 -0.5000 -0.5100 -0.5200 -0.5300 -0.5400

Columns 56 through 66

-0.5500 -0.5600 -0.5700 -0.5800 -0.5900 -0.6000 -0.6100 -0.6200 -0.6300 -0.6400 -0.6500

Columns 67 through 77

-0.6600 -0.6700 -0.6800 -0.6900 -0.7000 -0.7100 -0.7200 -0.7300 -0.7400 -0.7500 -0.7600

Columns 78 through 88

-0.7700 -0.7800 -0.7900 -0.8000 -0.8100 -0.8200 -0.8300 -0.8400 -0.8500 -0.8600 -0.8700

Columns 89 through 99

-0.8800 -0.8900 -0.9000 -0.9100 -0.9200 -0.9300 -0.9400 -0.9500 -0.9600 -0.9700 -0.9800

Columns 100 through 101

-0.9900 -1.0000

xMat =

1.0e+005 \*

1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405

1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405

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1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405 1.8405

yMat =

1.0e+003 \*

0.0085 0.0406 0.0244 0.0705

0.0251 0.1200 0.0720 0.2080

0.0879 0.4200 0.2520 0.7280

0.5715 2.7300 1.6380 4.7320

zMat =

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

0 0 0 0 0 0 0 0 0

cSum =

55 155 255 355 455 555 655 755 855 955

eMean =

5.6667

-33.0000

eMat =

1 1 1

-22 10 -87

cSub =

12 22 32 42 52 62 72 82

13 23 33 43 53 63 73 83

14 24 34 44 54 64 74 84

15 25 35 45 55 65 75 85

16 26 36 46 56 66 76 86

17 27 37 47 57 67 77 87

18 28 38 48 58 68 78 88

19 29 39 49 59 69 79 89

lin =

Columns 1 through 19

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19

Column 20

20

lin =

Columns 1 through 19

1 -2 3 -4 5 -6 7 -8 9 -10 11 -12 13 -14 15 -16 17 -18 19

Column 20

-20

r =

0.7400 0.2348 0.7350 0.9706 0.8669

r =

0.7400 0 0.7350 0.9706 0.8669

**twoLinsPlot.m:**

figure;

t=linspace(0, 2\*pi, 360);

plot(t, sin(t));

hold on

plot(t, cos(t), '--r');

xlabel('Time(s)');

ylabel('Function values');

title('Sin and Cos functions');

legend('sin', 'cos');

xlim([0, 2\*pi]);

ylim([-1.4, 1.4]);

