**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

 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]);

