clc, clear

%Variant3

%Task 1A

disp('---TASK 1a---')

syms x;

A = [cos(2\*x) sin(2\*x);

-cos(x) sin(x)];

det(A)

simplify(det(A))

%task 1b

disp('---TASK 1b---')

B=[ 1 1 1 ;

4 5 9;

16 25 81;

]

det(B)

%Task2A

disp('---TASK 2a---')

clear x y

syms x y

C = [2\*x+1 3;

x+4/3 x]

detC = det(C);

factor(detC)

solve(factor(detC))

x = -5:0.1:5;

y = [2\*(x + 1).\*(x - 2)];

figure(1);

plot (x,y)

hold on, grid on

plot(-1,0,'or')

plot(2,0,'or')

%Task2B

disp('---TASK 2b---')

clear

syms x y ;

D = [6 3 x-1;

2\*x 1 0;

4 x+2 2

]

F = det(D)

solve(factor(F))

x = -5:0.1:5;

y = [2\*x.^3 + 2\*x.^2 - 20\*x + 16];

figure(2);

plot (x,y)

hold on, grid on

plot(-4,0,'or')

plot(1,0,'or')

plot(2,0,'or')

%Task3A

disp('---TASK 3a---')

clear

syms x1 x2;

A = [5 -3;

2 7];

B = [16;

31];

A1= A

A2= A

A1(:,1)=B;

A2(:,2)=B;

x1 = det(A1)/det(A);

x2 = det(A2)/det(A);

x = [x1;

x2;

];

A\*x

B

%Task3B

disp('---TASK 3b---')

clear

syms x1 x2 x3;

A = [1 2 3;

4 5 6;

7 8 0;

]

B = [12;

30;

30;

]

A1=A

A2=A

A3=A

A1(:,1)=B;

A2(:,2)=B;

A3(:,3)=B;

x1 = det(A1)/det(A);

x2 = det(A2)/det(A);

x3 = det(A3)/det(A);

x = [x1;

x2;

x3;

];

A\*x

B

%Task4A

disp('---TASK 4a---')

syms x y

A = [5 -3;

2 7];

B = [16;

31];

X = A^-1\*B

%Task4B

disp('---TASK 4b---')

syms x y z

A = [1 2 3;

4 5 6;

7 8 0];

B = [12;

30;

30;

]

X = A^-1\*B