Question 2 :

Synthesis of a 4 bar mechanism using Bloch’s method

A is the Matrix Containing Angular Velocities and Acceleration terms

D is Determinant of **A**

B is RHS matrix of Bloch's Method

R contains the Lengths of Mechanism links

```
clear
```

Constants

```
OM = [10 -5 8] ; % Angular Velocities rad/s
AL = [0 15 -8]  ; % Angular Accelerations rad/s^2
```

Bloch's Method

```
A = ones(3);
for j = 1:3
    A(2,j) = OM(1,j);
    A(3,j) = 1i*AL(1,j) - (OM(1,j))^2;
end
D = det(A);
```

For 1st Iteration R1 = -D

for multiple iterations , change R1

```
R1 = (-D);
B = [R1 ; 0 ; 0] ;
C = ones(3,9);
for j = 1:3
    E = A;
    E(1:3,j) = B;
    C(1:3 , 3*j-2:3*j) = E ;
end
R2 = -(R1/D)*det(C(1:3,1:3));
R3 = -(R1/D)*det(C(1:3,4:6));
R4 = -(R1/D)*det(C(1:3,7:9));
R = [R1; R2; R3; R4]
```

```
R = 4×1 complex
10^5 ×
   0.0039 - 0.0015i
   1.9080 - 1.0920i
  -0.5040 + 0.5520i
  -2.7000 + 1.7100i
```

Plot

```
R2_1 = R2+R1;
R3_2 = R2_1+R3;
R4_3 = R3_2 + R4 ;

plot([real(R1) real(R2_1)],[imag(R1) imag(R2_1)]);
hold on
plot([real(R2_1) real(R3_2)],[imag(R2_1) imag(R3_2)]);
plot([real(R3_2) real(R4_3)],[imag(R3_2) imag(R4_3)]);
plot([real(R4_3) real(R1)],[imag(R4_3) imag(R1)]);
grid on
hold off
title(' Plot / Drawing of Mechanism')
```