clear all
cf
% "fourbar.m" is a Matlab program to calculate & plot the position of fourbar crank-rocker
% ME 3200 Fall 2001 by M. Minor
% 9-20-01
% NOTE: delete the ";" at the end of a line to view a calculation
% type fourbar at command prompt to run

% Defining the link lengths...
L1=3.5;
l2=1;
l3=3;
l4=2;
l6=5;
psic=30/180*pi;
theta1=0;

% Forloop parameters...
theta2min=0;
theta2max=2*pi;
steps=20;
dtheta2=(theta2max-theta2min)/steps;
theta2=pi/4;

% Starting a for loop to examine all configurations...
for j = 1 : steps
r1=L1*cos(theta1)+i*sin(theta1));
r2=l2*cos(theta2)+i*sin(theta2));

% Step 1: find r7 & l7
r5=r2-r1;
l5=abs(r5);
theta5=angle(r5);

% Step 2: find psi
psi=acos((l4^2+l5^2-l3^2)/2/l5/l4);

% Step 3: find theta4 & r4
theta4=theta5-psi;
r4=l4*cos(theta4)+i*sin(theta4));

% Step 4: find r3
r3=r1+r4-r2;
theta3=angle(r3);

% Step 5: find theta5 & r5
theta6=theta3+psic;
r6=l6*cos(theta6)+i*sin(theta6));

% Step 6: find rc
rc=r2+r6;

% Plotting the data...
hold on
plot(rc,'k+')
plot(r1+r4,'kx')
plot(r2,'ko')
if (theta2==pi/4),
plot([0,r2,r2+r3,r1])
plot([r2,r2+r6,r2+r3])
end
theta2=theta2+dtheta2;
end

axis equal
grid
xlabel('x')
ylabel('iy')