```matlab
%This is the script for HW7 Problem 1


clear all
clc


%Initialize constants
Nw = 10;
Ntheta = 10;
GJ = 1.5*10^6;
EI = 5*GJ;
l = 6;
e = l*0.02;
a = 2*pi;
q = 12*10^3;
alphaR = 5*pi/180;
c = 1.6;
lambda = -30*pi/180;
q_bar = q*c*a;
y = 0:0.05:l;
k = 1;


while lambda <= 30*pi/180


%Initialize all vectors and matrices
f = zeros(Nw + Ntheta,1);
phi = zeros(Nw + Ntheta,1);
K = zeros(Nw + Ntheta,Nw + Ntheta);
A = zeros(Nw + Ntheta,Nw + Ntheta);


%Construct F
for i = 1:Nw
    f(i) = q*c*a*cos(lambda)*alphaR*l/(i+2);
end


for i = Nw+1:(Nw + Ntheta)
    f(i) = q*c*a*e*cos(lambda)*alphaR*l/(i-Nw+1);
end


%Construct A and K
for i = 1:Nw
    for j = 1:Nw
        K(i,j) = EI*i*j*(i+1)*(j+1)/(l^3*(i+j-1));
        A(i,j) = cos(lambda)*sin(lambda)*(j+1)/(i+j+2);
    end
end


for i = 1:Nw
    for j = Nw + 1:Nw + Ntheta
        A(i,j) = -cos(lambda)^2*l/(i+j-Nw+2);
    end
end


for i = Nw + 1:Nw + Ntheta
    for j = 1:Nw
        A(i,j) = e*cos(lambda)*sin(lambda)*(j+1)/(i+j-Nw+1);
    end
end


for i = (Nw + 1):(Nw + Ntheta)
    for j = (Nw + 1):(Nw + Ntheta)
        K(i,j) = GJ*(i-Nw)*(j-Nw)/(l*(i+j-2*Nw-1));
        A(i,j) = -e*cos(lambda)^2*l/(i+j-2*Nw+1);
    end
end


%Solve the eigenvalue problem for the divergence dynamic pressure
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```matlab
    B = K^(-1)*A;
    [V,D] = eig(B);


    qD(k) = -1/(max(max(D))*1000);


    lambda = lambda + 2*pi/180;
    k = k + 1;
end


lambda1 = -30*pi/180:2*pi/180:30*pi/180;
qD1 = GJ*pi^2./(4*e*c*a*l^2*cos(lambda1).*(1 - 3*pi^2/76*l/e*GJ/EI*tan(lambda1)))/1000;


x = -30:2:30;
plot(x,qD,'-or')
hold on
plot(x,qD1,'-^0b')
title('q_D Over a Range of Sweep Angles','FontSize',16)
xlabel('Sweep Angle (degrees)','FontSize',16)
ylabel('q_D (kPa)','FontSize',16)
legend('Eigenvalue Problem','Equation 3.90')
```