```
% Name (first and last)
% CSC 2262
% cs2262xx
% Sample 2
R1 = 2.07;
R2 = 1.93;
X = 2.59;
guess1 = 20*pi/180;
guess2 = 40*pi/180;
accuracy = 1e-7;
count = 0;
for(Y = 2 : .01 : 3)
   count = count + 1;
   f1 = @(t1,t2) R1*cos(t1) + R2*cos(t1+t2) - X;
   f2 = @(t1,t2) R1*sin(t1) + R2*sin(t1+t2) - Y;
   df1dt1 = @(t1,t2) -R1*sin(t1) - R2*sin(t1+t2);
   df1dt2 = @(t1,t2) -R2*sin(t1+t2);
   df2dt1 = @(t1,t2)  R1*cos(t1) + R2*cos(t1+t2);
   df2dt2 = @(t1,t2)  R2*cos(t1+t2);
   [t1,t2]=newton2(f1,f2,df1dt1,df1dt2,df2dt1,df2dt2,guess1,guess2,accuracy);
   R1x = R1*cos(t1);
   R1y = R1*sin(t1);
   R2x = R2*cos(t1+t2);
   R2y = R2*sin(t1+t2);
   line1x = [0  R1x];
   line1y = [0  R1y];
   line2x = [R1x  R1x+R2x];
   line2y = [R1y  R1y+R2y];
   plot(line1x,line1y,'b',line2x,line2y,'r',X,Y,'ko');
   axis([ 0  3.5  -.5  3.5]);
   set(gca,'xtick',   0 : .5 : 3.5);
   set(gca,'ytick', -.5 : .5 : 3.5);
   pbaspect([1  1  1]);
   xlabel('x');
   ylabel('y');
   title('Sample 2');
   pause(.02);
   if(count == 1)
      pause(10);
   end
end
```

```
% function newton2
function
[t1,t2]=newton2(f1,f2,df1dt1,df1dt2,df2dt1,df2dt2,guess1,guess2,accuracy)
t1_new = guess1;
t2_new = guess2;
t1_old = guess1 + 1;
t2_old = guess2 + 1;
while(abs(t1_new-t1_old) >= accuracy || abs(t2_new-t2_old) >= accuracy)
    t1_old = t1_new;
    t2_old = t2_new;
    d = [ f1(t1_old,t2_old)
          f2(t1_old,t2_old) ];
    a = [ df1dt1(t1_old,t2_old)  df1dt2(t1_old,t2_old)
          df2dt1(t1_old,t2_old)  df2dt2(t1_old,t2_old) ];
    b = inv(a);
    p = b*d;
    t1_new = t1_old - p(1);
    t2_new = t2_old - p(2);
end
t1 = t1_new;
t2 = t2_new;
```