**% Name (first and last)**

**% CSC 2262**

**% cs2262xx**

**% Sample 9b**

**[xd yd] = textread('sample9a.dat');**

**n = length(xd);**

**color = ['k', 'r', 'b', 'g', 'k', 'm', 'c', 'k'];**

**figure(1);**

**hold on;**

**box on;**

**for(k = 2:n-1)**

**xd3 = [ xd(k-1) xd(k) xd(k+1) ];**

**yd3 = [ yd(k-1) yd(k) yd(k+1) ];**

**c2 = polyfit( xd3, yd3, 2 );**

**x = xd(k-1) : .001 : xd(k+1);**

**y2 = polyval( c2, x );**

**plot( x, y2, color(k), xd, yd, 'ko' );**

**axis([0 10 1 13]);**

**set(gca,'xtick',0:10);**

**set(gca,'ytick',1:13);**

**xlabel('x');**

**ylabel('y');**

**title('Fitted 2nd Order Polynomials');**

**end**

**figure(2);**

**hold on;**

**box on;**

**for(k = 3:n-2)**

**xd5 = [ xd(k-2) xd(k-1) xd(k) xd(k+1) xd(k+2) ];**

**yd5 = [ yd(k-2) yd(k-1) yd(k) yd(k+1) yd(k+2) ];**

**c4 = polyfit( xd5, yd5, 4 );**

**x = xd(k-2) : .001 : xd(k+2);**

**y4 = polyval( c4, x );**

**plot( x, y4, color(k), xd, yd, 'ko' );**

**axis([0 10 0 13]);**

**set(gca,'xtick',0:10);**

**set(gca,'ytick',0:13);**

**xlabel('x');**

**ylabel('y');**

**title('Fitted 4th Order Polynomials');**

**end**

**figure(3);**

**hold on;**

**box on;**

**for(k = 4:n-3)**

**xd7=[xd(k-3) xd(k-2) xd(k-1) xd(k) xd(k+1) xd(k+2) xd(k+3)];**

**yd7=[yd(k-3) yd(k-2) yd(k-1) yd(k) yd(k+1) yd(k+2) yd(k+3)];**

**c6 = polyfit( xd7, yd7, 6 );**

**x = xd(k-3) : .001 : xd(k+3);**

**y6 = polyval( c6, x );**

**plot( x, y6, color(k), xd, yd, 'ko' );**

**axis([0 10 -4 18]);**

**set(gca,'xtick',0:10);**

**set(gca,'ytick',-4:2:18);**

**xlabel('x');**

**ylabel('y');**

**title('Fitted 6th Order Polynomials');**

**end**