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% Name (first and last)
% CSC 2262
% cs2262xx
% Sample 9c
[xd yd] = textread('sample9a.dat');
n = length(xd);
for(k = 4 : n-3)
    xd3 = [ xd(k-1)  xd(k)  xd(k+1) ];
    yd3 = [ yd(k-1)  yd(k)  yd(k+1) ];
    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) ];
    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)];
    c2 = polyfit( xd3, yd3, 2 );
    c4 = polyfit( xd5, yd5, 4 );
    c6 = polyfit( xd7, yd7, 6 );
    cder2 = polyder(c2);
    der2 = polyval( cder2, xd(k) );
    cder4 = polyder(c4);
    der4 = polyval( cder4, xd(k) );
    cder6 = polyder(c6);
    der6 = polyval( cder6, xd(k) );
    fprintf('x=%.1f  der2=%.5f  der4=%8.5f  der6=%8.5f\n', ...
        xd(k), der2, der4, der6);
end

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