Problem 4:

Mistake in Problem 4:

Diagram

Description automatically generated

I made a small mistake while calculating the IV DD where 0.5-0.5 becomes 0 which will cancel the whole 4th degree polynomial expression.

Looking at the graph:

The code is

fx = @(x)0.5\*x.^3 -2\*x.^2+3\*x+ 1;

p2x = @(x) -17+12.5.\*(x+2)-3.5.\*(x+2).\*(x+1);

p3x = @(x) -17+12.5.\*(x+2)-3.5.\*(x+2).\*(x+1) + 0.5.\*(x+2).\*(x+1).\*(x);

p4x = @(x) -17+12.5.\*(x+2)-3.5.\*(x+2).\*(x+1) + 0.5.\*(x+2).\*(x+1).\*(x);

xData = [-2,-1, 0,1,2];

xPlot = linspace(-2,2,100);

plot(xData, fx(xData),'\*', xPlot, p2x(xPlot), 'b', xPlot, p3x(xPlot), 'r', xPlot, p4x(xPlot), 'g',xPlot,fx(xPlot), 'm');

xlabel(" Data set");

ylabel(" Function Value");

legend('Actual data point', 'p2x', 'p3x', 'p4x', 'fx');

which doesn’t have any fourth degree expression in p4x.

The graph:

Chart

Description automatically generated

Now, the graph looks way better than the actual submitted in the assignment.