Your tables need to have units and the correct number of s.f. I've explained in the "Helpful Tidbits" section of the class web page how to do this (by formatting the cells). The graphs below are based on an older version of exp 17 in which we followed a reaction of Cr^{3+} with EDTA so you'll see [Cr^{3+}] on the graphs. For BAR (new exp 17), you will need to use scientific notation for the 1/[Dye]. If you set the numbers in your tables to the correct number of s.f. this will transfer to your graphs. The s.f. for the time axis depend on how accurately you measured your times but probably will have 2 s.f. The unit for time depends on how you reported it in your tables. Generally, most people record the time in minutes and reported it in minutes in the tables so the unit for time on the graph is minutes. You don't have to convert to seconds. Using either minutes or seconds is fine.

The following are examples of what a good graph should look like. I've used the Zero-Order graph as an example and took someone's data for the graph. In Excel set all margins on the page to zero inches. Excel might complain about your printer not being able to do this. Just ignore the warning since you're not printing the graph. This will allow maximum coverage on your paper when the graph is printed. Remover the border (if you can figure out how). An exponential or parabolic fit usually work pretty well. The examples below are just to show different ways to show the legend and equations.

When you do a graph and you are asked for "Location" put the graph in a separate sheet as a Chart. It will look more like it will on the paper. If you already have your graphs in the worksheet with the data you can move them to a separate sheet. Right-click on the graph (toward the outer edges) and then choose "Location" or "Move Chart" then select "New Sheet". In the newer versions of Excel there's also a "Move Chart" icon in the "Design" tool bar.

Your title should be descriptive and a font size of about 14 or 16 point. Your axes labels should be about 12 pt font. The axes labels, legend and equation labels should be about 10 pt.

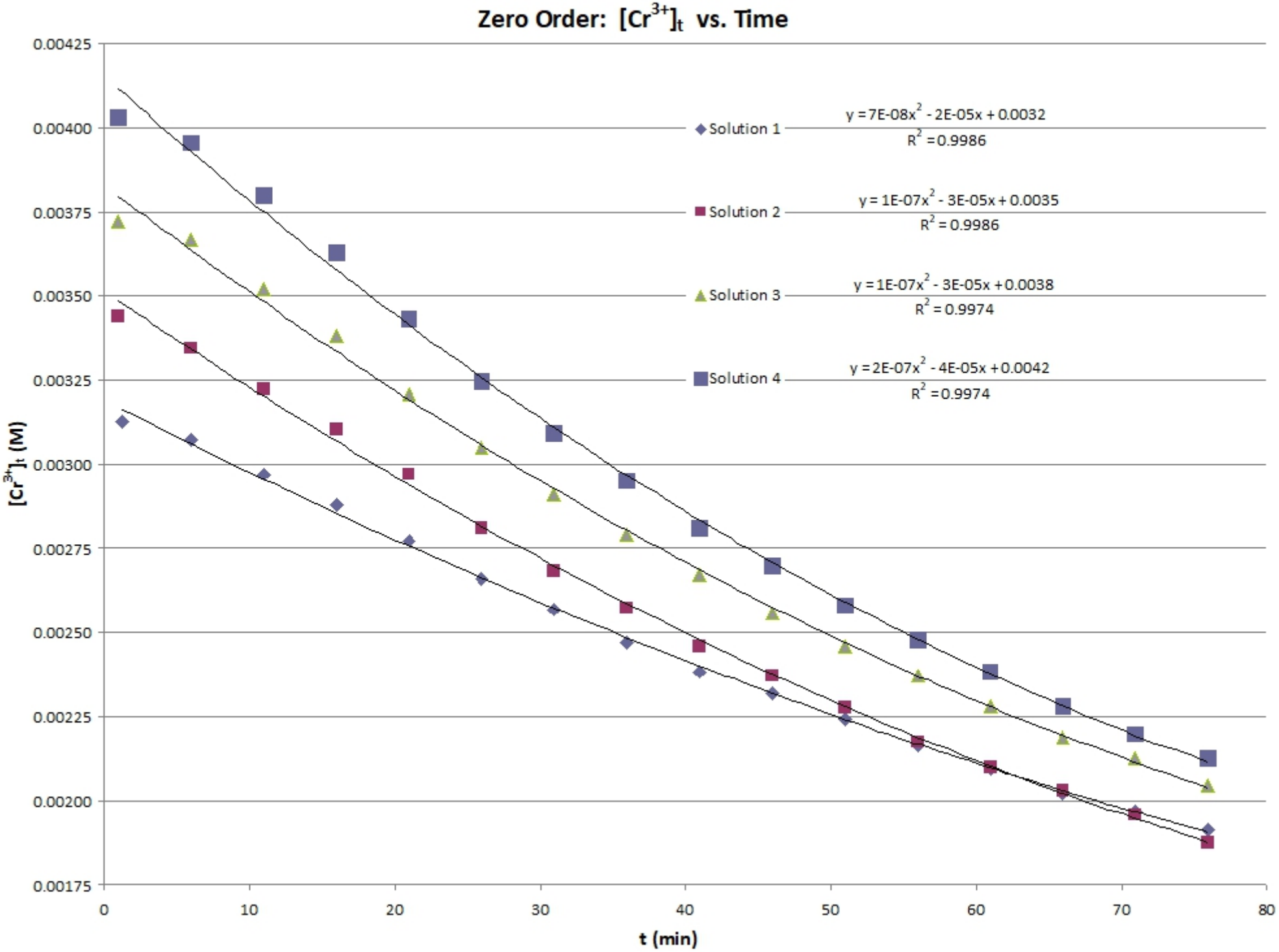
Make sure there's a minimum amount of empty space in the graph itself (between the data points and the axes). You can do this by right-clicking on each axis and setting the scales to the appropriate values. Note how little empty space there is on my examples. Stretch the graph to fill up the page.

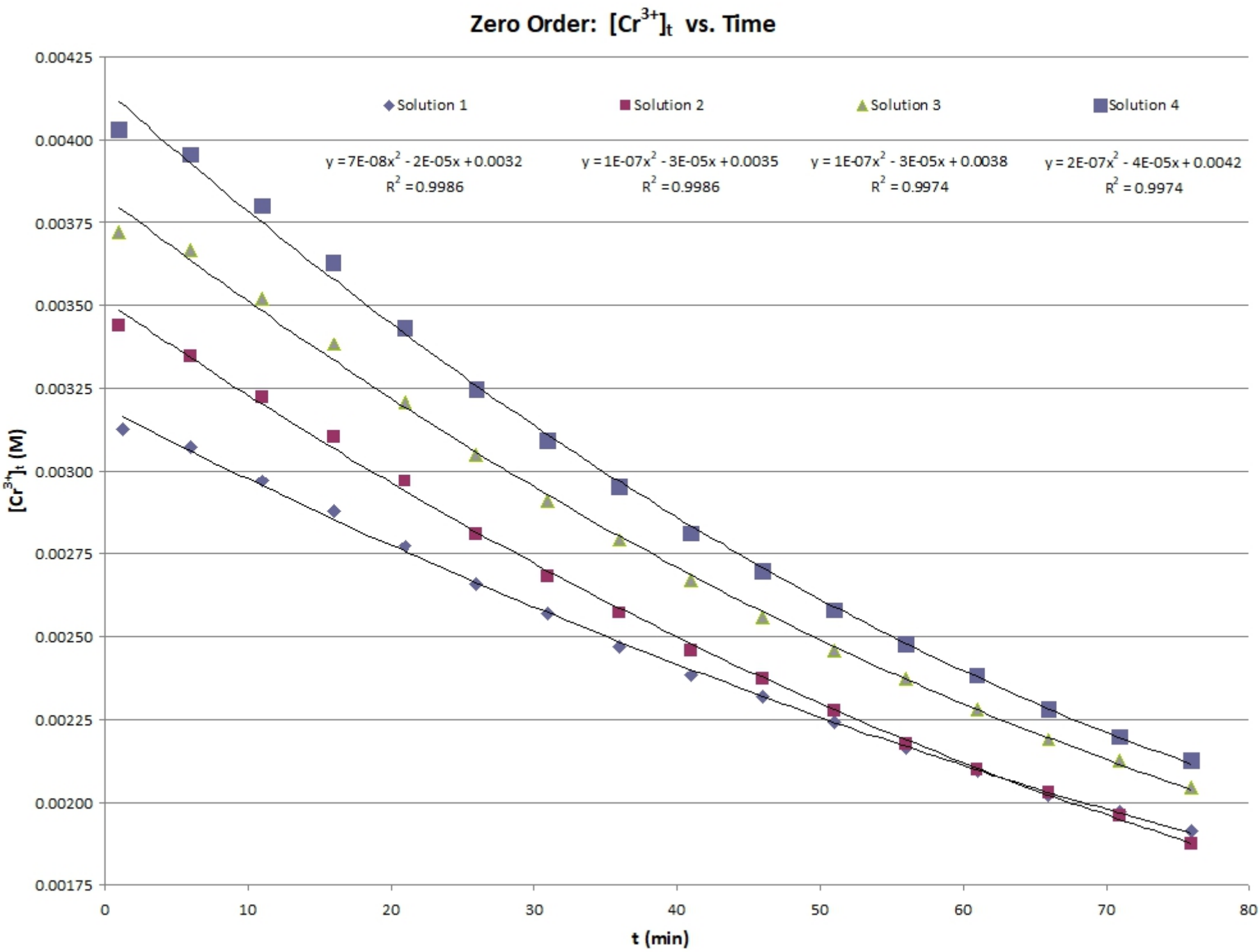
You can move the legend inside the graph so you can stretch the graph more to the right. Once you do this you can line up the eqns for the lines with the labels for each soln. You can keep the legend vertical (example 1 below) or make it horizontal (example 2 - click the legend and grab the edge and stretch it or in the newer Excel versions click on "Layout" and you can set it there).

Make sure for the first-order and second-order plots the slopes from the equations have enough s.f. You can set the s.f. in the eqn. labels. Right click on the label, choose "Format Data Labels" ("Format Trendline Label" for newer versions), choose "Number" and set the decimal places. Your slopes (related to the rate constants) should have 3 s.f. (certainly no more than 4) so setting the number to 5 decimal places should give enough s.f. (maybe even more than you should have depending on your data and choice of order).

If you can't figure out something save your file and then "play around" with things. You can't destroy your file.

Note in this example a couple of the lines cross. That means there was something wrong with the data. After doing graphs 3 and 4 you may find a "bad" solution may have a slope significantly different than the others. Put a "bad" rate constant on your report sheet but you may not want to include it in your average.


Zero Order: [Cr3+]t vs. Time
0.00425
0.00400
0.00375
0.00350
0.00325
0.00300
0.00275
0.00250
0.00225
0.00200
0.00175
[Cr3+]t (M)
0
10
20
30
40
50
60
70
80
t (min)
Solution 1
y = 7E-08x2 - 2E-05x + 0.0032
R2 = 0.9986
Solution 2
y = 1E-07x2 - 3E-05x + 0.0035
R2 = 0.9986
Solution 3
y = 1E-07x2 - 3E-05x + 0.0038
R2 = 0.9974
Solution 4
y = 2E-07x2 - 4E-05x + 0.0042
R2 = 0.9974


Zero Order: [Cr3+]t vs. Time
Solution 1
Solution 2
Solution 3
Solution 4
y = 7E-08x2 - 2E-05x + 0.0032
R2 = 0.9986
y = 1E-07x2 - 3E-05x + 0.0035
R2 = 0.9986
y = 1E-07x2 - 3E-05x + 0.0038
R2 = 0.9974
y = 2E-07x2 - 4E-05x + 0.0042
R2 = 0.9974
[Cr3+]t (M)
0.00425
0.00400
0.00375
0.00350
0.00325
0.00300
0.00275
0.00250
0.00225
0.00200
0.00175
0
10
20
30
40
50
60
70
80
t (min)