Appropriate plots

Appropriate plots must show the following:

1. show ranges of horizontal and vertical values that clearly show the features of the

curves being described

2. If data is used, show both the data points and the proposed model/fit

3. Curves should be smooth, not linear interpolations between data points

4. impossible/inappropriate numerical values should be eliminated and correct values

shown clearly

Fit this data with a numerical cubic spline model of E(t)

For example







clearly not an appropriate plot if it is intended

to show only the data points.

right click on plot, go to format, click on traces, under symbol, select a symbol, and click on lines and turn off lines.

Also need to change axes values to show all data points clearly. See plot below.













For fitted functions to data, it is important to show both the function and data.

The plot above is missing the data points. To show these, click on the exit1(a) parameter, go to the end of the name and press comma (,). This will go to a new line

so you can enter another parameter to show. (note: you must also add the dependent parameter on the horizontal axis the same way).







The plot above shows the data and fitted function.

However, there are a couple problems.

The vertical range is too large to show significant variations in the function.

Change these by clicking on the range values and input new values.

The function fit goes beyond the data range, however it is not appropriate to extrapolate

the function outside of the data range, so this must be corrected.





To correct the function outside of the data range for this example, we will assume the function value is zero every where else than the given data range.

To do this, add a limiiting statement about the value of the function outside the data range.

Note: in some cases, you may need to explicitly define ranges and function values, for example if the function value is non-zero.





Why is it important to do all this?

It is important to represent the numerical model (function) clearly for the audience.

It is also important to clearly define the function, assuming it is to be used for further calculations/computations.

For example, calculate the integral or area under the function between -10 to 100





clearly very different values due to extrapolation error/calcluations outside of data range

Why are the following not acceptable plots and how would you fix them?



