

- 1) (1 pt) Look at the data in the `hw31.dat` file. Based on what we have discussed in class, what is the lowest relative error for the value of the definite integral of the values in the table that can reasonably be expected?
- 2) (1 pt) What is the relative error in the integral estimate using the trapezoidal method applied to the table data? The exact value of the integral (to 10 digits) is 0.7614402697.
- 3) (2 pt) Use the values in the table to fit a not-a-knot spline to the data. Then use the spline to increase the number of approximate values to 51. Plot the resulting interpolated values along with the original data points.
- 4) (4 pt) Use your table of interpolated data points to estimate the value of the integral using both the trapezoidal rule and Simpson's rule. Compute the relative error for each of these integral approximations.
- 5) (2 pt) Estimate the value of the integral by sending the spline to MATLAB's `integral` function and compute the relative error.
- 6) (1 pt) Of the approximations you obtained in Questions 5 and 6, which is the most accurate?