Review: Begin Section 2/Exam 2:

1. Modules/Packages/Libraries
2. NumPy – a Python library for working with multidimensional arrays.
   1. array creation and manipulation – np.linspace, np.array
   2. array slicing
3. SciPy – a Python library for scientific computing.
   1. numerical integration with quad
   2. root finding with fsolve
4. Matplotlib – a Python library for plotting (similar to MATLAB).
   1. simple plotting of numpy arrays
   2. formatting plots – TeX (<https://matplotlib.org/stable/tutorials/text/mathtext.html> )
5. Numerical methods:
   1. Gaussian quadrature – integrate.quad

Continuing: Section 2/Exam 2:

1. Least Squares Curve Fitting
2. Cubic spline
3. scipy.linalg.eig – solve the eigenvalue problem:
4. scipy.optimize.fsolve – find roots of set of equations
5. scipy.integrate.solve\_ivp – solve systems of ordinary differential equations
   1. State variable dynamic models
   2. Solving ODE’s with Python