

Due 10/27/2025, 9:30 a.m.

Solve the following problems and staple your solutions to this cover sheet. (Computer outputs must be put in the appropriate place in the solution, not attached as an appendix. You may physically cut and paste the output in the problem or allow appropriate space in the printout to add your hand written work.)

1. Sec 4.1, Prob 7. Note: Since we have already done several problems using the log and log-log plots, for this problem apply suggested ladder of powers/transformations to x and/or y values until the transformed data looks linear. Then, use it to build the model. You may use intermediate steps in the ladder.
2. Sec 4.1, Prob 10. Note: Use the same method as above.
3. Use hand calculations to find a Lagrange polynomial that passes through the following points.

$$(-2, 11), (-1, 5), (0, 1), (1, -1)$$

4. Sec 4.2, Prob 3.
5. Sec 4.3, Prob 1. You can do the (divided) differences by hand. You may also use it to test your own code!
6. Sec 4.3, Prob 6.
7. Sec 4.4, Prob 1(a).
8. Sec 4.4, Prob 1(d).
9. & 10. Sec 4.4, Prob 2. Note: This problem results in a very large system of equations. You could also develop your own computer/Mathematica program to determine the coefficient of natural splines. See section 4.4, Project 1. You may also use the Chapter 4 Mathematica file on my website. If you are going to use it, you should be able to explain what is happening at each command. Make it your own!