DUE: THURSDAY November 7, 2019

To receive full credit for the following problems, you must exhibit the intermediate steps that lead you to your final results.

1. Boas, p. 123, problem 3.6–16.

2. Boas, p. 123, problem 3.6–21. You may use the method developed in class to compute the inverse of the coefficient matrix.

3. Boas, p. 123, problem 3.6–29. Unfortunately, the problem as stated by Boas is only half correct. While it is true that if A and B commute, then it follows that $e^{A+B} = e^A e^B$ (as you should verify in this problem), it is not *always* true that if A and B are matrices that do not commute, then $e^{A+B} \neq e^A e^B$. A correct statement (which is weaker than the assertion made by Boas) is the following one:

> If $e^{t(A+B)} = e^{tA}e^{tB}$ for all possible real (or complex) values of t, then the matrices A and B commute.

Thus, you should solve the corrected version of problem 3.6–29 of Boas as indicated above. You can still use the hint provided by Boas, appropriately modified.

4. Boas, p. 123, problem 3.6–32.

5. Boas, p. 131, problem 3.7–27.

6. Boas, p. 132, problem 3.7–34.