18.024–ESG Problem Set 7

Pramod N. Achar

Spring 2000

Monday

1. Exercise 1 in Section 8.17 of Apostol, Volume II.
2. Exercise 1 in Section 8.22 of Apostol, Volume II.
3. Exercise 14 in Section 8.22 of Apostol, Volume II. (The term "Jacobian matrix," which appears in this problem, just means the total derivative matrix.[1])

Tuesday

4. Exercise 6 in Section 9.8 of Apostol, Volume II.
5. Exercise 9 in Section 9.8 of Apostol, Volume II. (Just compute $\partial f/\partial x$ and $\partial f/\partial y$; you may omit $\partial^2 f/\partial x \partial y$.)

Thursday

6. Exercise 2 in Section 8.24 of Apostol, Volume II.

[1] You may have heard of the term *Jacobian* before. Be careful: the Jacobian of a function is the determinant of its Jacobian matrix; in particular, the Jacobian is scalar-valued, whereas the Jacobian matrix is of course matrix-valued. We will encounter Jacobians in a few weeks.