Math 376, Spring 2018
Homework 11
Due: May 2, 2018 in your discussion section

(1) In class, we proved the existence-uniqueness theorem for differential equations with initial condition of the form

$$Y'(t) = A(t)Y(t), \qquad Y(a) = B$$

(Theorem 6.17 in the notes or §7.21 of Apostol). Explain how to adapt the proof for the differential equation

$$Y'(t) = A(t)Y(t) + Q(t), \qquad Y(a) = B.$$

Don't rewrite the whole proof, just explain where to make changes (there is more than one right answer here).

(2) (Apostol 7.20.1)
(3) (Apostol 7.24.1)
(4) (Apostol 7.24.7)
(5) Show that the examples (2) and (3) in Example 6.21 in the notes are, in fact, norms. Show that example (2) is complete assuming that it is complete when $n = 1$ (the case $n = 1$ is hard to prove rigorously given what we've discussed).