Math 3592H   Honors Mathematics I   Fall Semester 2012

Assignment 7 - Due Thursday 10/25/2012

Read: the rest of Section 1.7 and Section 1.8.

Exercises:
Hand in only the exercises which have stars by them.

Section 1.7: 14*, 15b*, 16abc, 19, 20, 21*, 22
Section 1.8: 1, 2*, 3*, 4, 5, 6, 7, 8*, 9*, 10, 11,12, 13*

Comments on these questions:
1.7.14 is abstract. First of all, what does it mean? There is a comment about this expression (with f instead of g) on page 124, which is that it need not tend to a limit as h goes to 0. Depending on the direction h takes as it approaches 0 the expression may approach various different values. You can see this if you take g to be a linear function, say given by a diagonal matrix with different numbers down the diagonal. What you do know is that the expression differs from a linear function of h by a quantity which goes to zero. Prove that the linear function is bounded as h goes to 0 and then deduce that the function you are asked about is bounded. This is a standard kind of manipulation in this area of mathematics.