

Due Thursday, Oct 11. (Final version due Wednesday, Oct 24. See calendar for all the due dates.)

*From the textbook, chapter 3:*

3.14

3.15

3.35

3.49

3.50

Note that Appendix B of the textbook has hints for some problems.

*Also do the following problems:*

1. Show by induction that for any positive integer  $n$  and any real number  $x$ ,

$$(1 + x^2)^n \geq 1 + nx^2.$$

2. There are two children who have to divide  $2n$  pieces of candy which appear to be all different. Show by induction that there are at least  $2^n$  different ways to do this fairly (so that each child gets  $n$  pieces of candy). Why is this not the exact answer?