

# Homework 4

This homework is due by 6PM on Friday 2/4/11. You are encouraged to work on the problem sets as a group, but each student must hand in their own problem set.

## 1 Factoring

Please read Appendix B4 with care, and do the following problems. Textbook Questions: Appendix B4: Problems 2, 4, 6, 10, 14, 22, 24, 30

## 2 Complete the square

For each of the following expressions, complete the square to rewrite the expression in the form  $a(x - x_V)^2 + y_V$  where  $s$ ,  $x_V$  and  $y_V$  are real numbers (which can be positive or negative). Note that the original expression and your expression must be *equal* to each other. Then, write down what the position of the vertex is.

- $x^2 + 2x$
- $-x^2 + 3x$
- $2x^2 - 2x + 1$
- $-3x^2 + x - 1$
- $hx^2 + qx$  (where  $h$  and  $q$  are constants)

## 3 Quadratic functions

Textbook Questions: Section 4.2: 6, 8, 10, 12, 16, 18, 20. For each of these problems, instead of the problem asked for (i) Calculate the discriminant  $D$  (ii) determine the  $y$ -intercept, and if it/they exist, determine the  $x$ -intercepts (iii) determine the vertex and (iv) graph the function to check your results.