

Homework 7

CS 3343 – Fall 2006
Tom Bylander, Instructor

assigned October 12, 2006
due October 20, 2006

Your solutions must be submitted as a document to WebCT.

1. (20 pts.) Do Exercise 6.1.8.
2. (20 pts.) Solve the following system by Gaussian Elimination. Show your work.

$$\begin{aligned}x_1 + x_2 + x_3 &= 4 \\x_1 - 3x_2 - 2x_3 &= 1 \\-4x_1 - 2x_2 + x_3 &= 3\end{aligned}$$

3. (20 pts.) Do Exercise 6.3.3.
4. (20 pts.) Do Exercise 6.3.4. Also show what the binary trees without any balancing would look like.
5. (20 pts.) In pseudocode, write an efficient algorithm to evaluate a polynomial in two variables, e.g., evaluating $3x^2y - 2x^2 - xy^2 + 4xy + 2y^2 - 1$ at $x = 3$ and $y = -2$. Assume that the coefficients are given to you in a matrix. You may assume Horner's rule is a subroutine. How many multiplications does your algorithm perform assuming that no exponent is larger than n ?