CS 2233 Discrete Mathematical Structures – Fall 08

11/21/08

8. Homework

Due **12/5/08** before class

10.1 (page 693)

(a) (1 point) 2 e, f. Justify your answers.

(b) (5 points) 4 a, b, c, d, e, f, g, h, i, j.
i) List the vertices at level 1.
j) List the vertices at level 3.

(c) (5 points) Use (strong) induction on l to show that for all $l \geq 1$, a full binary tree with l leaves has $2l - 1$ vertices total.

(d) (5 points) A *complete* k-ary tree is a full k-ary tree, where every leaf is at the same level. Use (strong) induction on h to show that a complete k-ary tree of height h has exactly k^h leaves, for all $h \geq 0$.

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(a) (4 points) 4 a,b,c

(b) (3 points) 14 a,b,c

Extra credit: The questions below are for extra credit. Any points earned here may be applied towards any other homework (in order to increase the homework score to $\geq 60\%$).

12.1 (page 793)

(a) (3 points) 20. Note that a palindrome has a symmetric structure. For example, "hannah" and "hantnah" are palindromes.

(b) (3 points) 32