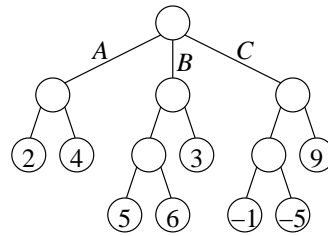


## Quiz 6, CSCI 150, Fall 2003

Name: \_\_\_\_\_

1. [10 pts] Suppose a game player has constructed a game tree as given at right. In this tree, high numbers represent good boards for X, and it is currently X's move. (As you can see, X has three possible moves from which to choose, labeled A, B, and C.)



- a. Fill in *all* empty circles with the values assigned them according to the minimax evaluation algorithm.
- b. Which move will X choose?

2. [10 pts] Consider the following context-free grammar.

$$\mathbf{S} \rightarrow \mathbf{T} + \mathbf{S} \mid \mathbf{T}$$

$$\mathbf{T} \rightarrow \mathbf{F} \mathbf{T} \mid \mathbf{F}$$

$$\mathbf{F} \rightarrow x \mid y \mid (\mathbf{S})$$

At right, draw a parse tree for the sentence  $x(x + y)$ .

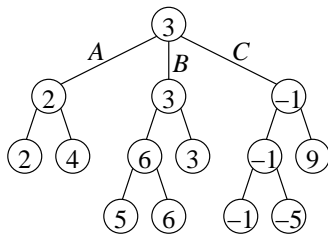
3. [10 pts] For each of the following, say whether the regular expression describes a language including the sentence. Your answer will be either “yes” or “no.”
- a.  $\mathbf{ab}^*$  includes  $abab$ ? \_\_\_\_\_
  - b.  $\mathbf{(a|b)a}$  includes  $aba$ ? \_\_\_\_\_
  - c.  $\mathbf{a(a|b)^*b}$  includes  $abbbaaab$ ? \_\_\_\_\_
  - d.  $\mathbf{(a|b)(ba|ab)^*}$  includes  $ababab$ ? \_\_\_\_\_
  - e.  $\mathbf{(a|b)(ba|ab)^*}$  includes  $abababa$ ? \_\_\_\_\_

## Solutions, Quiz 6, CSCI 150, Fall 2003

### Statistics

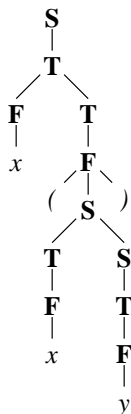
mean	24.714 (519.000/21)
stddev	4.061
median	24.000
midrange	21.000-28.750
#1.	6.19 / 10
#2.	7.14 / 10
#3.	8.38 / 10
+ 3-point bonus	

1. a.



b.  $B$

2.



3. a. No,  $\mathbf{ab}^*$  does not include  $abab$ .  
 b. No,  $\mathbf{(a|b)a}$  does not include  $aba$ .  
 c. Yes,  $\mathbf{a(a|b)^*b}$  includes  $abbbaaab$ .  
 d. No,  $\mathbf{(a|b)(ba|ab)^*}$  does not include  $ababab$ .  
 e. Yes,  $\mathbf{(a|b)(ba|ab)^*}$  includes  $abababa$ .