MTH 135
Fall 2013
Starkey

Name_____

Chapter 3 Quiz

25 points

1. Define syntax and semantics in the context of programming languages.

2. What is the most common way to describe the syntax of a programming language?

3. What are the three most common ways to describe the semantics of a programming language? Give a brief description of each.

4. Given the following grammar for an assignment statement…

$< assign > \rightarrow < id > = < expr >$
$< id > \rightarrow A \mid B \mid C$
$< expr > \rightarrow < expr > + < term > \mid < term >$
$< term > \rightarrow < term > * < factor > \mid < factor >$
$< factor > \rightarrow (< expr >) \mid < id >$

a. Show a leftmost derivation for A = B + C * A
b. Show a parse tree for A = B * (C * (A + B))

5. Explain how to show a particular grammar is ambiguous.

6. Compute the weakest precondition for the following sequence of assignment statements with the given post condition.

   $a = a + 2 * b - 1;$
   $b = 2 * a - 1;$
   $\{b > 3\}$