Score: _____

1. What does this AST evaluate to?

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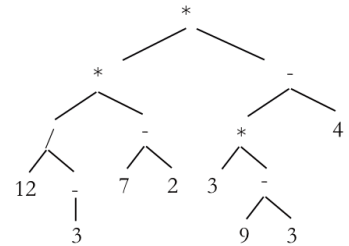
2. What does the following expression evaluate to? ((λxy. (* x (+ x y))) 4 1)

_____

_____

_____

3. What does the following expression evaluate to? ((λxyz. (* x (* x y))) 4 1 3)

_____

_____

_____

4. Starting with an empty stack, which **two** sequence of operations will yield the string **LICK** from the incoming string **LIMERICK**. *Note*: It is acceptable for there to still be characters on the stack and/or on the incoming string when your output is complete.

*You must select two answers to be correct!*

A) OXOXOOOOOXOX

B) OXOOOOOXOXOX

C) OXOXOOXOOXOX

D) OXOXOOXXOXOX

E) OXOOOOOXOXOO

5. Starting with an empty stack, what sequence of operations will yield the string **MIRE** from the incoming string **LIMERICK**. *Note*: It is acceptable for there to still be characters on the stack and/or on the incoming string when your output is complete.

- (A) OOOXXOOXXX
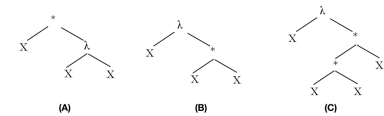- (B) OOOXXXOOXX
- (C) OOXOXOOXX
- (D) OOOXXOOXX
- (E) OOOXXOOOX

6. Which of the following ASTs is equivalent to (λ x. + (* 1 x) x)?

- (A) A
- (B) B
- (C) C
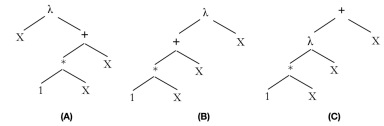
7. Which of the following ASTs could be used to correctly calculate the square of a number?

- (A) A
- (B) B
- (C) C

8. Starting with an empty stack, what is the output after the following operations are performed, given the input string of 123456? Hint: Anything popped off the stack goes to the ouput.

OXOOOXOOXX

- (A) 3452
- (B) 4235
- (C) 1345
- (D) 1234
- (E) 1465

9. Which of the following prefix notation expressions is equivalent to ($2+ X^2 * 4 + 3$)?

- (A) (* 4 (+ (+ 3 (sqr X)) 2))
- (B) (+ 3 (+ (* 4 (sqr X))) 2)
- (C) (+ 3 (+ (* 4 (sqr X^2) 2)))
- (D) (+ 3 (+ (* 4 (sqr X)) 2))
- (E) (+ 3 (+ (* 4 X^2) 2))