# CS 4250 PROGRAMMING LANGUAGES FALL 2018

**KEY TO QUIZ #9 [7 points]**

1. [1 point] Define and give an example of a composition of two functions.

*Answer:*

A composition of functions is defined as . An example: for and

:

1. [2 points] Assume that you have a function *f*(*x*) *= x \* x –* 3 and is a notation for “apply-to-all” functional form. Show the output that will be produced as the result of the following application:

*Answer:*

(1, 13, 33)

1. [2 points] Write the following expression using a prefix notation:

*Answer:*

(\* 10 (/ (- (\* x x) 5) (+ z sqrt(+ x (\* y y)))))

1. [2 points] In the table below show the value of each of the following expressions:

|  |  |
| --- | --- |
| *expression* | *value* |
| (car (cdr (cdr ‘((1 2 3) 4 5 (6 7))))) | 5 |
| (cdadr ‘(a ((c d e) f g h) b)) | ‘(f g h) |
| (cons ‘a ‘()) | ‘(a) |
| (cons ‘c ‘(a b)) | ‘(c a b) |