

## Lab 1 Write Up Jake Traut

### 2. Scala Basics: Binding and Scope

a) Use of pi at line 4 is bound by the inner braces {} val declaration of 3.14159 on line 3, because pi is also being called within the braces.

Use of pi at line 7 is bound by the val declaration 3.14 on line 1 because it is called in the same environment outside of any braces.

b) The use of x at line 3 is bound by line 1 value of 3 as a default. When x is called in line 6 it is bound by the input value of f(x) on line 2, as it falls within the scope or braces of the the function. The use of x on line 10 is bound by the input int value of the function on line 2 because it is within the scope of the function, yet outside the scope of the val x declaration on line 8. On line 13, x is bound to the default value 3 given on line 1 because it is outside the scope of the function.

### 3. Scala Basics: Typing

Yes, g is a well-typed function because it will return a valid integer pair, a is an int and b is a tuple of two ints, and the return format will be ((Int, Int), Int).

x: Int because declared Int

(a, b): (Int, (Int, Int) because 1, x and 3 are all Ints

(b, 1): ((Int, Int), 1) because b still Ints and 1 is int

(b, a+2): ((Int, Int), Int) because a is Int and 2 is Int added is still Int.