CSCE 156 - Lab 12.0 - Recursion - Worksheet

Names: _____

1. Activity 1: Modify the Fibonacci code as specified and answer the following questions
   a) When computing `fibonacci(10)`, how many times would fibonacci(5) be called?
   b) When computing `fibonacci(20)`, how many times would `fibonacci(10)` be called?
   c) How long does it take for `fibonacci(45)` to execute?
   d) Give an estimate of an asymptotic characterization of the number of times the function is called when `fibonacci(n)` is computed: is it constant, linear, quadratic, cubic, or exponential?
2. Activity 3: Modify the code that renders the Sierpinski Triangle as described in Case Study 3 and answer the following questions.
   a) For a depth of 4 (`recursions = 4`), how many triangles are drawn?
   b) For a depth of 10, how many triangles are drawn?
   c) For a depth of 13, how many triangles are drawn??
   d) (Optional) Without actually running it (the application will most likely crash), can you determine how many triangles are drawn for a depth of 20?
3. Activity 4: Demonstrate your working program, what are the first 5 and last 5 digits of the 1000-th Pell Number?

Lab Instructor Signature_____