Instructions: The following questions cover the material in Chapters 3, 5, and 6 of the textbook, as well as the lectures on functions and conditionals (Weeks 2, 3, and 4).

1   Definitions

Question 1. (5 points) In a few sentences, describe the Boolean data type. How does it differ from other data types we have learned about so far?

Question 2. (5 points) In a few sentences, describe the difference between a parameter and an argument.

2   Evaluating Conditional Statements

Question 3. (2 points)

```
>>> x = 10
>>> y = 2
>>> x != y
```

_____

Question 4. (2 points)

```
>>> x = 5
>>> y = 2
>>> x // y == y
```

_____

Question 5. (2 points)

```
>>> x = 5
>>> y = 2
>>> x % y <= y
```

_____

Question 6. (3 points)

```
>>> x = 5
>>> y = 2
>>> (x % y <= y) and (x < y)
```

_____

Question 7. (5 points)

```
>>> x = 5
>>> y = 2
>>> ((x % y <= y) or (x < y)) and (not y ** 2 > x)
```

_____

3 Understanding Conditionals and Recursion

Questions 10-13 refer to the following code:

```
1 def recurse(n, s):
2     if n == 0:
3         print(s)
4     else:
5         recurse(n-1, n+s)
6
7 recurse(3, 0)
```

Question 8. (5 points) What is the output of the program above? _____

Question 9. (15 points) Draw a stack diagram that shows the state of the program when it prints the result.

Question 10. (10 points) What would happen if instead of 3 and 0, you called the function in line 7 with the following arguments: `recurse(-1, 0)`?

Question 11. (10 points) Write a comment that would go above this function that explains everything someone would need to now in order to use this function (and nothing else). Recall that comments begin with a "#" at the beginning of each line that is a comment.