Name: _____ Recitation: _____ Andrew Id: _____

15-112 Fall 2018 Quiz 1

Up to 15 minutes. No calculators, no notes, no books, no computers. Show your work!
Do not use string indexing, loops, lists, dictionaries, try/except, or recursion on this quiz.
You may import the math library and use its functions.

1. (20 points) **Free Response:** Write the function `getTheCents(n)` from hw1 which takes a value `n` (which represents a payment in US dollars) and returns the number of cents in the payment. For example, if `n` is 2.45, the function should return 45.

   If `n` is an int, the function should return 0, as it has 0 cents; if it isn't a number, it should return `None`. If the payment has partial cents (for example, 3.953), it should be rounded up to the nearest cent (in this example, 96 cents).

2. (25 points) **Free Response:** Write the function `checkNthPower(x, y, n)` which takes three parameters, `x`, `y`, and `n`, and returns `True` if `y` is `x` raised to the `n`th power, and `False` otherwise. You may assume that `x`, `y`, and `root` are all real numbers (integers or floats).

   For example, `checkNthPower(2.2, 4.84, 2)` should return `True` since $2.2^2 = 4.84$, and `checkNthPower(9, 4, 0.5)` should return `False` since $9^{0.5} = 3$, not 4.

   Hint: recall that a negative number raised to a power between -1 and 1 results in an imaginary number. Don't let your function crash if `x` and `n` are both negative!

3. (15 points) **Short Answer:** List three distinct 15-112 course resources you can use if you're struggling with the homework problems.

4. (20 points) **Code Tracing:** Indicate what the following program prints. Place your answer (and nothing else) in the box to the right of the code.

```
def a(x):
    print("a1", x)
    y = 2
    x = x * y
    y = 3
    print("a2", x, y)
    return x + y

def b(x):
    print("b1", x)
    return x * 3

x = 5
print("main", a(b(2)))
print("main", x)
```

5. (20 points) **Reasoning Over Code**: Find one set of arguments (values for `a` and `b`) for the following program that make it return `True`. Place your answer (and nothing else) in the box to the right of the code.

```
def roc(a, b):
    if (type(a) != int) or (type(b) != int):
        return False

    if (a % b == 2) or (a > b):
        if (a // b == 5) and (a % b == 1):
            return True
    elif 1 < a % b < 3:
        return True
    return False
```