CS414: Recitation #1. Your Name:_____

You are free to work together with other students, but you should turn your own copy of your work.

Write your answers in the spaces provided.

1. Roots of negative numbers: The following code:

```
(-1.0)**0.5
```

gives a "value error", but

```
-1.0**0.5
```

evaluates to `-1.0` . Explain what happened.

2. If two planets with masses M_1 and M_2 are separated by distance R, the gravitational force between them obeys this formula: $F = G M_1 M_2 / R^2$. However, this code:

```
force = G * M1 * M2 / R * R
```

produces incorrect results. Explain why.

3. The following program should print `True` if `n` is a prime number, `False` if not:

```
for divisor in range(2, n):
     if n % divisor == 0:
          print False
     divisor += 1
print True
```

but the program doesn't work. Why not? *Hint: What does it print when* `n == 4`?

4. Consider the following boolean expression:

```
x = (not (not a  and  b)) or (a  and  not b)
```

The variables **a** and **b** can have the following combination of values:

a	b
True	True
True	False
False	True
False	False

What values of **a** and **b** will make **x** be **False**? *Method: write* **T** *or* **F** *under each letter, then under each operator. Do this four times.*

5. Give three examples of python expressions where the **+** operator will have different behavior, and will yield a result with a different **type**, depending on the types of the operands.