Quiz 23: Big-O runtime

Name: _____

CSCI 110 Section 1

Wednesday, November 2, 2016

1) What's the Big-O runtime of the following function? [10 points]

```java
void mystery(int n) {
    for (int i = 0; i < n; i += 3) {
        System.out.println(i);
    }
}
```

2) What's the Big-O runtime of the following function? [10 points]

```java
void mystery() {
    System.out.println("hello world");
}
```

3) What's the Big-O runtime of the following function, assuming "arr" has n elements? [10 points]

```java
void mystery(ArrayList<Double> arr) {
    for (int i = 0; i < arr.size(); i++) {
        System.out.println(arr.contains(arr.get(i) + 1));
    }
}
```

4) What's the Big-O runtime of the following function? [10 points]

```java
int mystery(int n) {
    int sum = 0;
    for (int i = 0; i < n; i *= 2) {
        sum += i;
    }
    return sum;
}
```

5) What's the Big-O runtime of the following function, assuming "arr" has n elements along each dimension? [20 points]

```
void mystery(int[][][][] arr) {
    int sum = 0;
    for (int i = 0; i < arr.length; i++) {
        for (int j = 0; j < arr[0].length; j++) {
            for (int k = 0; k < arr[0][0].length; k++) {
                for (int m = 0; m < arr[0][0][0].length; m++) {
                    sum += arr[i][j][k][m];
                }
            }
        }
    }
}
```

6) What's the Big-O runtime of the following function? [20 points]

```
int mystery(int n) {
    if (n == 0 || n == 1) {
        return 1;
    }
    return n * mystery(n-1);
}
```

7) What's the Big-O runtime of the following function? [20 points]

```
double mystery(double n) {
    if (n < 65.556) {
        return n * 4;
    }
    return mystery(n - 2.0) + mystery(n - 4.0) + mystery(n - 7.0);
}
```

8) What's the Big-O runtime of the following function? [extra credit, 10 points]

```
void mystery(int n, int m) {
    int a = 0;
    for (int i = 0; i < n; i++) {
        for (int j = 0; j < m; j++) {
            a += 1;
        }
    }
}
```