CS200 Spring 2015 written homework 2

name:
id:

Due: Thursday Feb 19, in class
Late: Tuesday Feb 24, in class

1. What is the best (lowest) big-O bounds for each of the following functions?

a) $f(n) = 5n^2(3n + \log n)$

b) $g(n) = \log_3 n + 2^3 \log_7 n$

c) $h(n) = 6n^2(n \log n)$

2. For each of the following methods, determine their best (lowest) worst case big-O complexity as a function of n:

```
public int f3(int n){
        int c = 0, step=1;
        while(step<n){
                step*=3;
                c++;
        }
        return c;
}

public int f6(int n){
        int c = 0;
        for(int i=0;i<n;i++)
                for(int j=0;j<=i;j++){
                        int s = n;
                        while(s>1){
                                s/=2;
                                c++;
                        }
                }
        return c;
}
```

```java
public int f7(int n){
    int s = n;
    int c = 0;
    while(s>1){
        s/=2;
        for(int i=0;i<n;i++)
            for(int j=0;j<=i;j++)
                c++;
    }
    return c;
}


public int f9(int n){
    int c = 0;
    int b = n;
    while(b>1){
        b/=2;
        c++;
    }
    for(int i=0;i<n;i++)
        for(int j=0;j<=i;j++)
            c++;
    return c;
}
```