

Quiz 1 (30 points) – This is a closed book, open notes quiz. **Solutions**

1. Give the Complexity Category for each of the below complexity functions.

(a) (5 points) $f(n) = 10n^2 + 15n - 224$

Solution: $\Theta(n^2)$

(b) (5 points) $f(n) = \log_3 n$

Solution: $\Theta(\log n)$

(c) (5 points) $f(n) = \frac{n(n-1)}{2}$

Solution: $\Theta(n^2)$

2. Give the Complexity Category for each of the below code snippets.

(a) (5 points)

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

Solution: $\Theta(n^2)$

(b) (5 points)

```
for(int i = 0; i < n; i++){
    for(int j = i; j >= 0; j--){
        System.out.println(j * i);
    }
}
```

Solution: $\Theta(n^2)$

(c) (5 points)

```
for(int i = 0; i < n; i++){
    for(int j = 1; j < n; j = j * 2){
        k += 1;
    }
}
```

Solution: $\Theta(n \log n)$