

CS62: Fall 2025 | Lecture #5 (Algorithmic Analysis) worksheet | Prof. Li

1. Simplify the following quantities using Big O notation:

a. $n + 1$

b. $1 + \frac{1}{n}$

c. $(1 + \frac{1}{n})(1 + \frac{2}{n})$

d. $2n^3 - 15n^2 + n$

e. $\frac{\log(2n)}{\log(n)}$

f. $\frac{\log(n^2 + 1)}{\log(n)}$

2. Give the order of growth of the running time for the following code fragments as a function of n :

```
int count = 0;
for (int i = 0; i < n; i++) {
    for (int j = i+1; j < n; j++) {
        for (int k = j+1; k < n; k++) {
            if (a[i] + a[j] + a[k] == 0) {
                count++;
            }
        }
    }
}
```

```
int sum = 0;
for (int k=n; k>0; k/=2){
    for (int i=0; i<k; i++){
        sum++;
    }
}
```