

Practice Problems 9

1. Review of BigOh and understanding its definition

2. Show the following

a. $T(n) = (n-1)^2$ $T(n)$ is $O(n^2)$

b. $T(n) = (n-1)^2$ $T(n)$ is $O(n^3)$

c. $T(n) = (n+2)^2 + 1$ $T(n)$ is $O(n^2)$

d. $T(n) = n^4 + 3n^3 + 2$ $T(n)$ is $O(n^4)$

3. Find Big-Oh of the following code segment

```
sum1 = 0;
```

```
sum2 = 1;
```

```
sum3 = 0;
```

```
for (i=n ; i>0 ; i--)
```

```
    sum1++;
```

```
    for (j=2 ; j<n ; j++)
```

```
        sum2++;
```

```
for (i=n ; i>0 ; i--)
```

```
    sum3++;
```

4. Simplify

a. $O(n^3 + 5n)$

b. $O(5n^2 + 150n \log n)$

c. $O(3n + 3n \log n)$