

Homework 2 – Big-O notation
Due Tuesday, 10/12

Name: _____

1. Give, using the “big oh” notation, the worst case running times of the following procedures as a function of n .

(a)

```
public void Multiply (int n)
{
    for (int i=1; i<=n; i++)
        for (int j=1; j<=n; j++)
            {
                C[i,j] = 0;
                for (int k=1; k<=n; k++)
                    C[i,j] := C[i,j] + A[i,j] * B[i,j];
            }
} // MatMpy
```

(b)

```
public void DoItRight (int n);
{
    for (int i=1; i<=n-1; i++)
        for (int j=i+1; j<=n; j++)
            for (int k=1; k<=j; k++)
                print i*j*k
} // DoItRight
```

(c)

```
public void VeryEven (int n)
{
    for (int i=1; i<=n-1; i++)
        {
            if (IsEven (i))
                {
                    for (int j=i; j<=n; j++)
                        x := x + 1;
                    for (int j=1; j<=i; j++)
                        y := y + 1;
                }
        }
} // VeryEven
```

(d)

```
public int Recursive (int n)
{
    if (n <= 1)
        return 1;
    else
        return (Recursive(n-1) + Recursive(n-1));
} // Recursive
```

2. Order the following functions by growth rate:

- (a) n
- (b) \sqrt{n}
- (c) $\log n$
- (d) $n/\log n$
- (e) $(1/3)^n$
- (f) $(3/2)^n$
- (g) 29