**EX 1**

The order of growth for the function is .

Because, the highest power in the function is the power of 2 to the variable ‘’.

The Order of Growth for the function is .

Because, the highest power in the function is the power of 3 to the variable ‘

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The order of growth for the function is .

Because in the function , is an increasing function. It increases as the value of increases. Similarly, also increases with increase in the value of . The product of two increasing functions and is also an increasing function resulting in the order .

**EX 2**

**Arrange the growth functions of the previous exercise in ascending order of efficiency for n=10 and again for n=1,000,000.**

**For n = 10:**

Least efficient: 2n + n3 + n5

4n4 – 4

30n3 + 200n2 + 1000n + 1

Most efficient: n3 log n

**For n = 1,000,000:**

Least efficient: 2n + n3 + n5

4n4 – 4

n3 log n

*Most efficient: 30n3 + 200n2 + 1000n + 1*

**EX 4**

Explanation

* The number of time the outer loop executes is times.
* The inner loop, runs times because, the value of count2 is multiplied by 2.

1. If the value of is 1, the number of times the inner loop executes is 0
2. If the value of is 2, the number of times the inner loop executes is 1
3. If the value of is 4, the number of times the inner loop executes is 2
4. If the value of is 8, the number of times the inner loop executes is 3

* So, , which is .