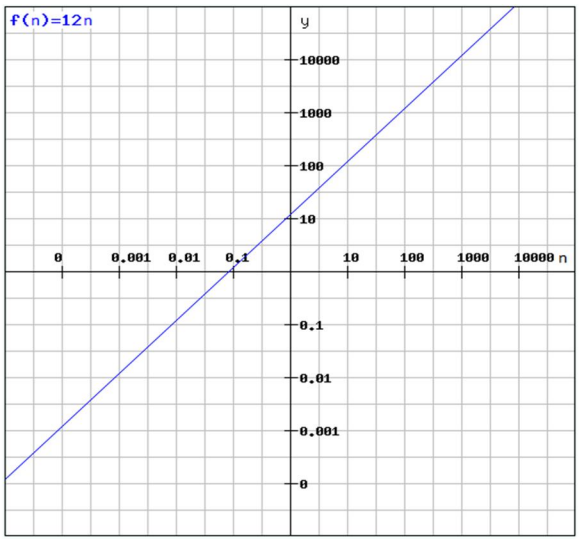
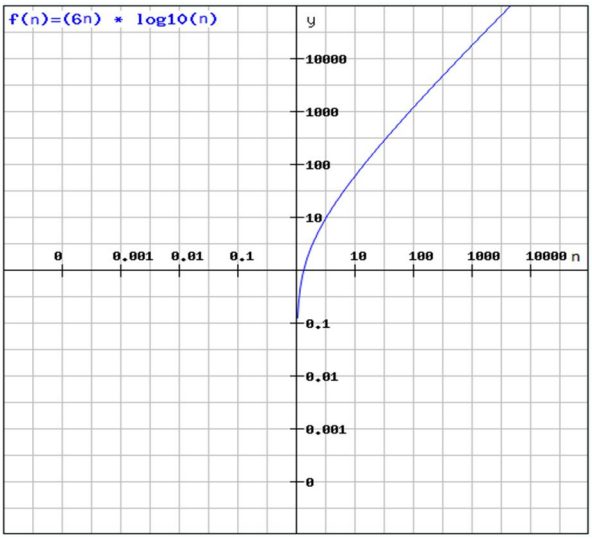
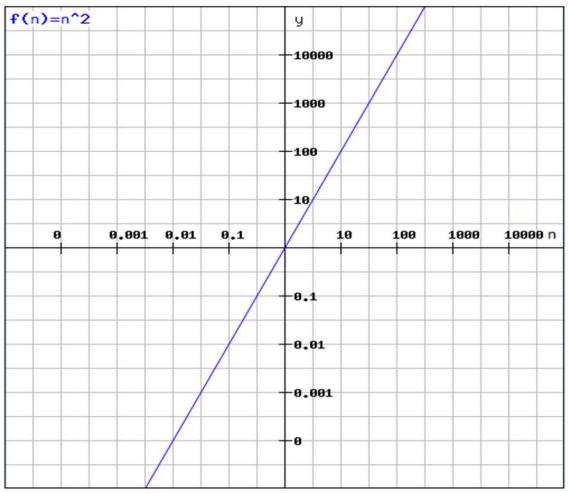
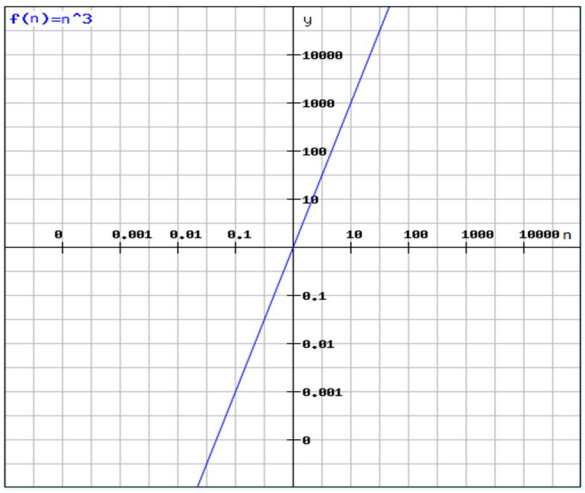
Name: Walid Sultan Aly Ahmed

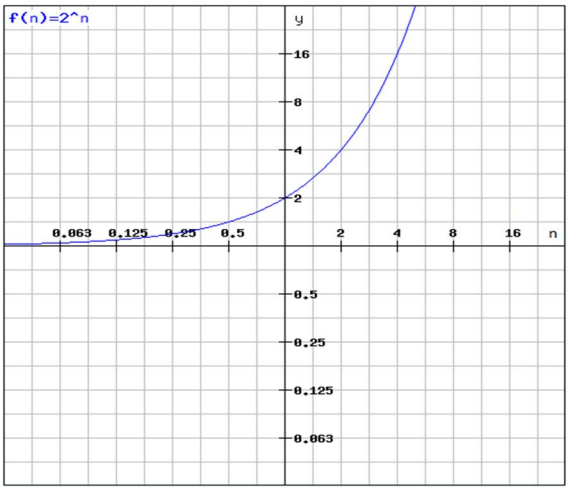
R-1.1











R-1.2

$10n \log n <= n^2$

$10 \log n <= n$

$n_o = 10$

R-1.6

4^n

2^n

n^3

$n^2 \log n$

$4^{\log n}$

$2n \log^2 n$

$4n^{3/2}$

$n \log n$

$5n$

$n^{1/2}$

$\log \log n$

$1/n$

R-1.10

Algorithm Loop1(n)

s ← 0	1
for *i* ← 1 **to** *n* **do**	n
s ← *s* + *i*	n

Algorithm Loop1 runs in O(n) time

R-1.14

Algorithm Loop5(n)

s ← 0	1
for *i* ← 1 **to** n_2 **do**	n^2
for *j* ← 1 **to** i **do**	n^2 $(n^2+1)/2$
s ← *s* + *i*	n^2 $(n^2+1)/2$

Algorithm Loop5 runs in $O(n^4)$ time

Proof

$\log_b x^a = a \log_b x$

let $\log_b x^a = y$

$b^y = x^a$

$b^{y/a} = x$

$\log_b b^{y/a} = \log_b x$

$y/a = \log_b x$

$y = a \log_b x$