Homework 2 CSC335

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1)

$f(n)$	1 sec	1 min	1 hour	1 day	1 month	1 year	100 years
$\log_2 n$	2^{10^6}	2^{6e7}	2^{3600e7}	$2^{86400e7}$	$2^{2592000e7}$	$2^{31536000e7}$	$2^{3153600000e7}$
$\sqrt{n}$	10^{12}	3.6×10^{15}	1.296×10^{19}	7.5×10^{21}	6.7×10^{24}	9.9×10^{26}	9.9×10^{30}
n	10^6	6×10^7	36×10^8	864×10^8	2592×10^9	31536×10^9	31536×10^{11}
n^2	10^3	7746	6×10^4	293938	1609969	5615693	56156923
n^3	10^2	391	1533	4421	13737	31594	146646
2^n	20	26	32	36	41	45	51

fig. 1: -NOTE- these values are estimates.

2)

- $\log_2 n$
  - $\log_2 n + 5$
- n
  - $6\sqrt{n}$
  - $3n + 5$
- $n \log_2 n$
  - $n \log_2 n$
- n^2
  - $9n^2$
- $n^2 \log_2 n$

  - $n^2 \log_2 5n$
- n^3
  - $8n^3$
  - $2n^3 + \log_2 n$
- n^5
  - $n - n^3 + 3n^5$
- 2^n
  - 2^{n-1}
  - 2^n

3)

a) the count of negative numbers (< 0) in the array, A

b) n

c) 0, as in no negatives, to n, as in all negatives.