Q1.

Sum_list 1

$1+2+\cdots+n-1+n = \frac{n(n+1)}{2}$

$\therefore \Theta(n^2)$

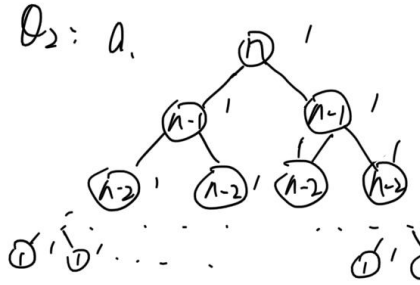
Sum_list 2

$1 \times n = n$

$\therefore \Theta(n)$

Sum_list 2 is asymptotically faster

Q2: a.



$1+2+\cdots+n = \frac{n(n+1)}{2}$

$\Theta(n^2)$

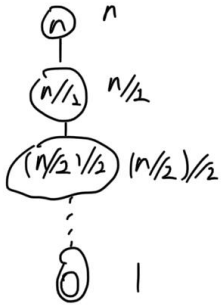
b.

$2^k = n$

$k = \log n$

$\therefore \Theta(\log n)$

C.



$1+2+4+\cdots+n = 2n-1$

$\therefore \Theta(n)$