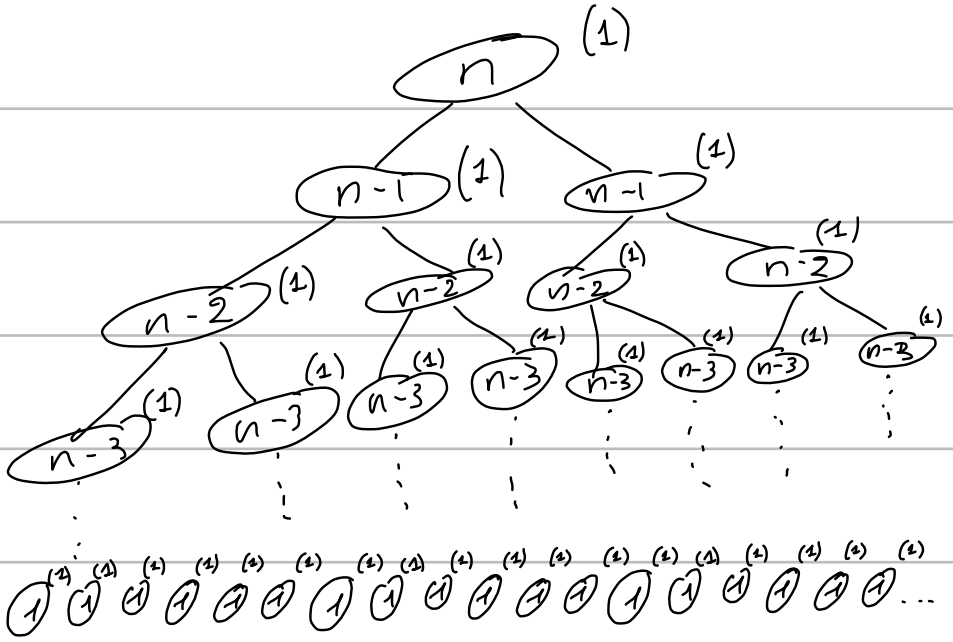
Part A



1

2

4

8

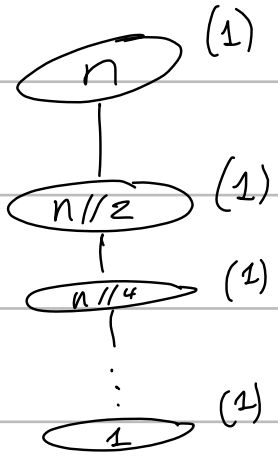
2^n

* The number of 1s depends on n

Level	calls per level	size per call	cost per call	total cost per level
0	1	n	1	1
1	2	$n-1$	1	2
2	4	$n-2$	1	4
3	8	$n-3$	1	8
k	2^k	$n-k$	1	2^k
$n-1$	2^{n-1}	1	1	2^{n-1}

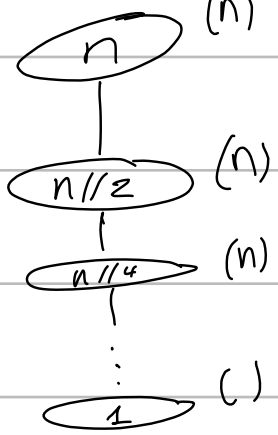
Total Cost $= 1+2+4+8+\ldots+2^k+\ldots+2^{n-1} = 2^n - 1 = \Theta(2^n)$

Part B



$$T(n) = \underbrace{1+1+1+\ldots+1}_{\log(n)} = \log(n)$$

Part C



$$T_{\text{per call}}(n) = 1+1+1+1+\ldots+1 = n$$

Because of the for loop repeating from 1 to n+1

$$T_{\text{total}}(n) = n+n+n+\ldots+n = n \cdot n = \theta(n^2)$$