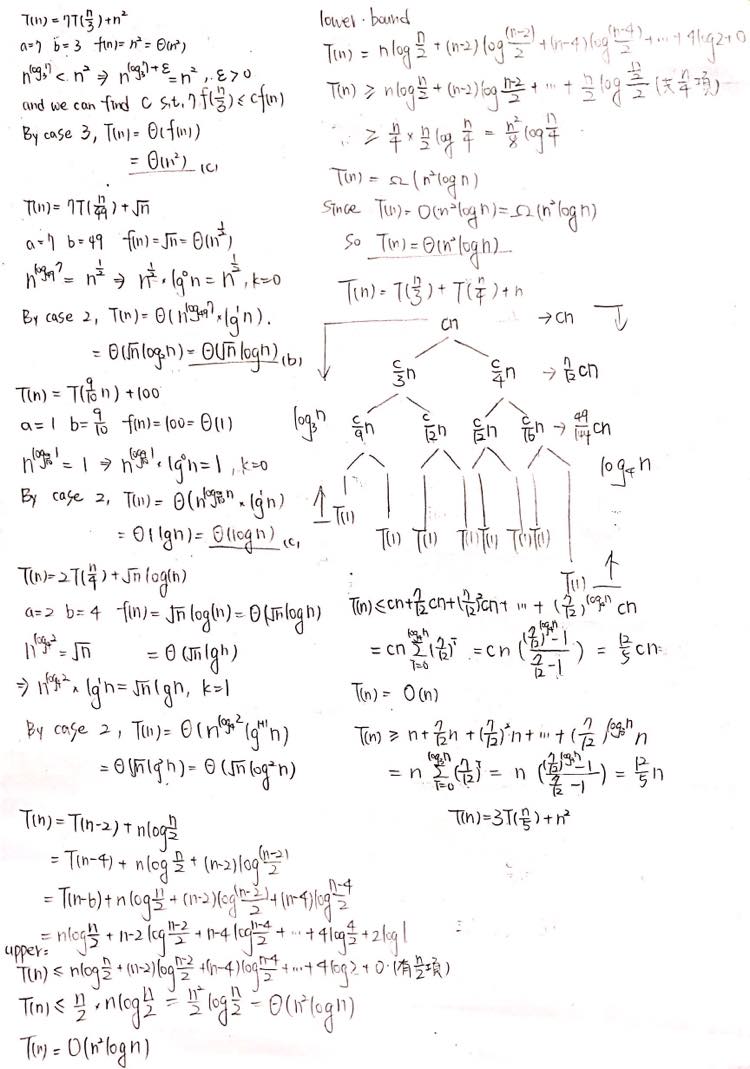
**Algorithm 2021 Spring HW1**

(Chapter 1 to Chapter 4)

Give asymptotic tight bound() for question 1-4 by using master theory.

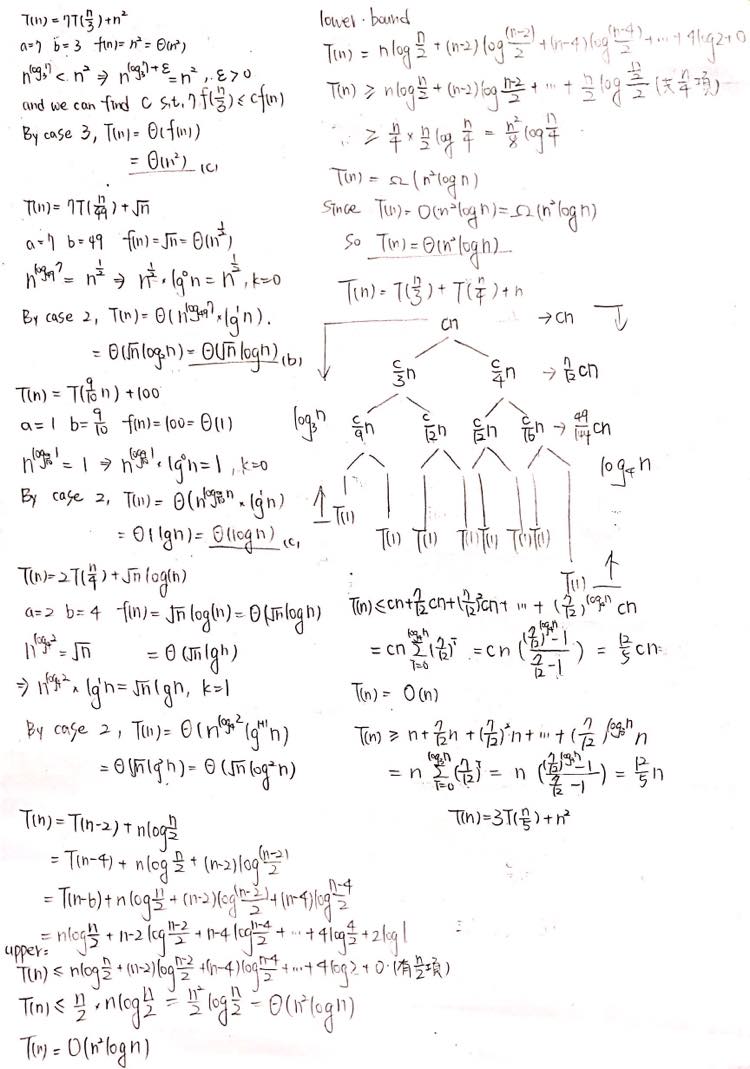
1. (2.5pts)

Ans: ( C )



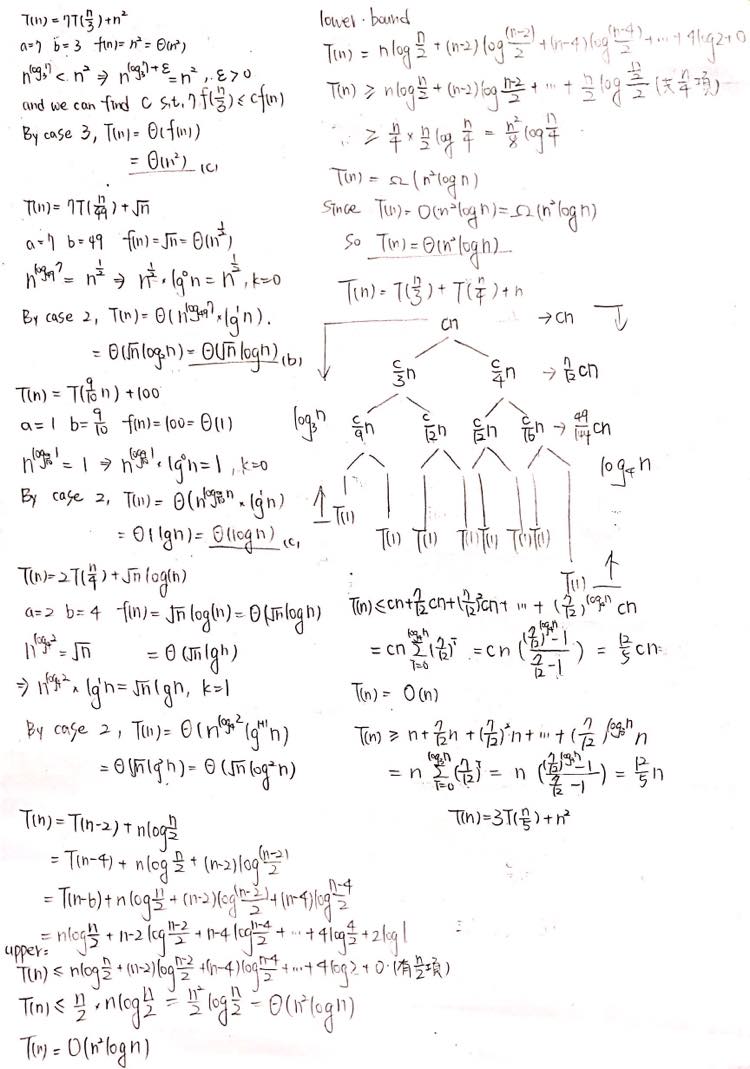
1. (2.5pts)

Ans: (B )



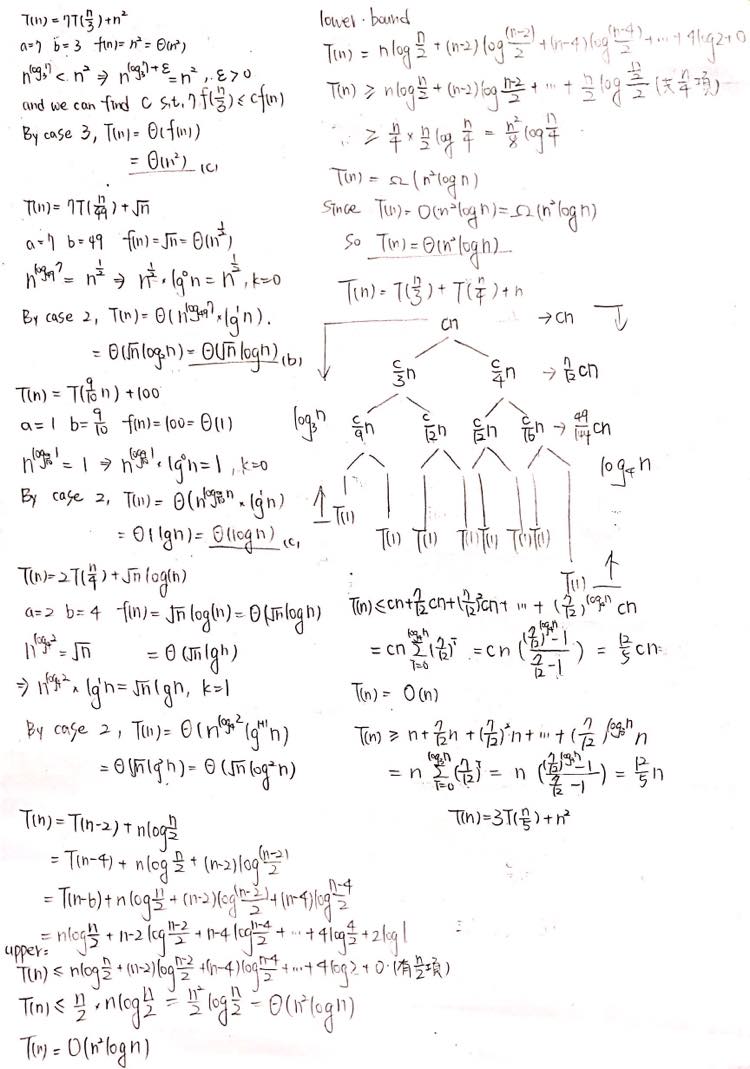
1. (2.5pts)

Ans: ( C )



1. (2.5pts)

Ans: ( C)

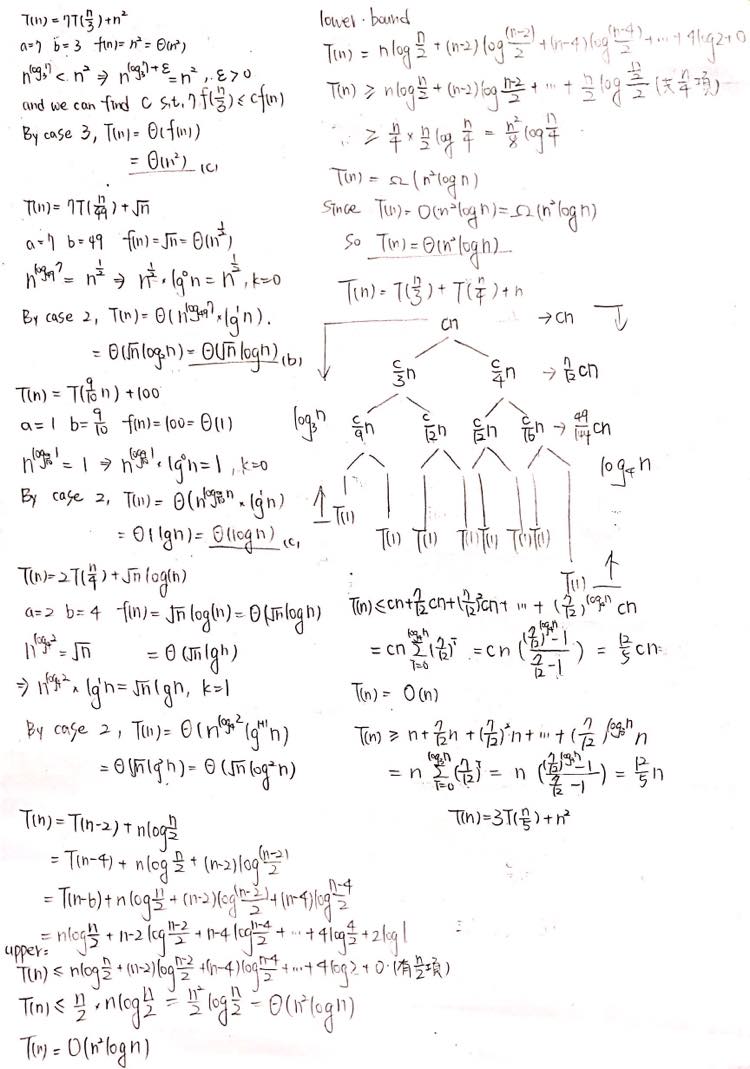


Give asymptotic tight bound() for question 5-6. (Assume that T(n) is a constant for sufficiently small n.)

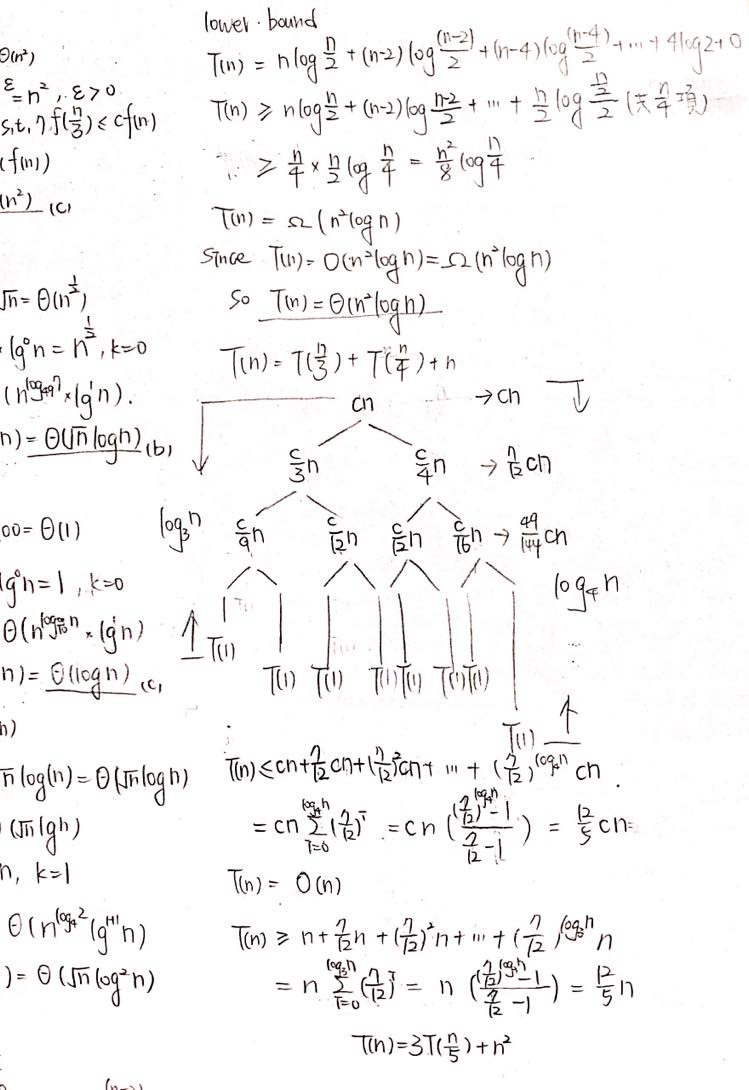
1. (15pts) (Assume is even.)

Ans:

Upper bound

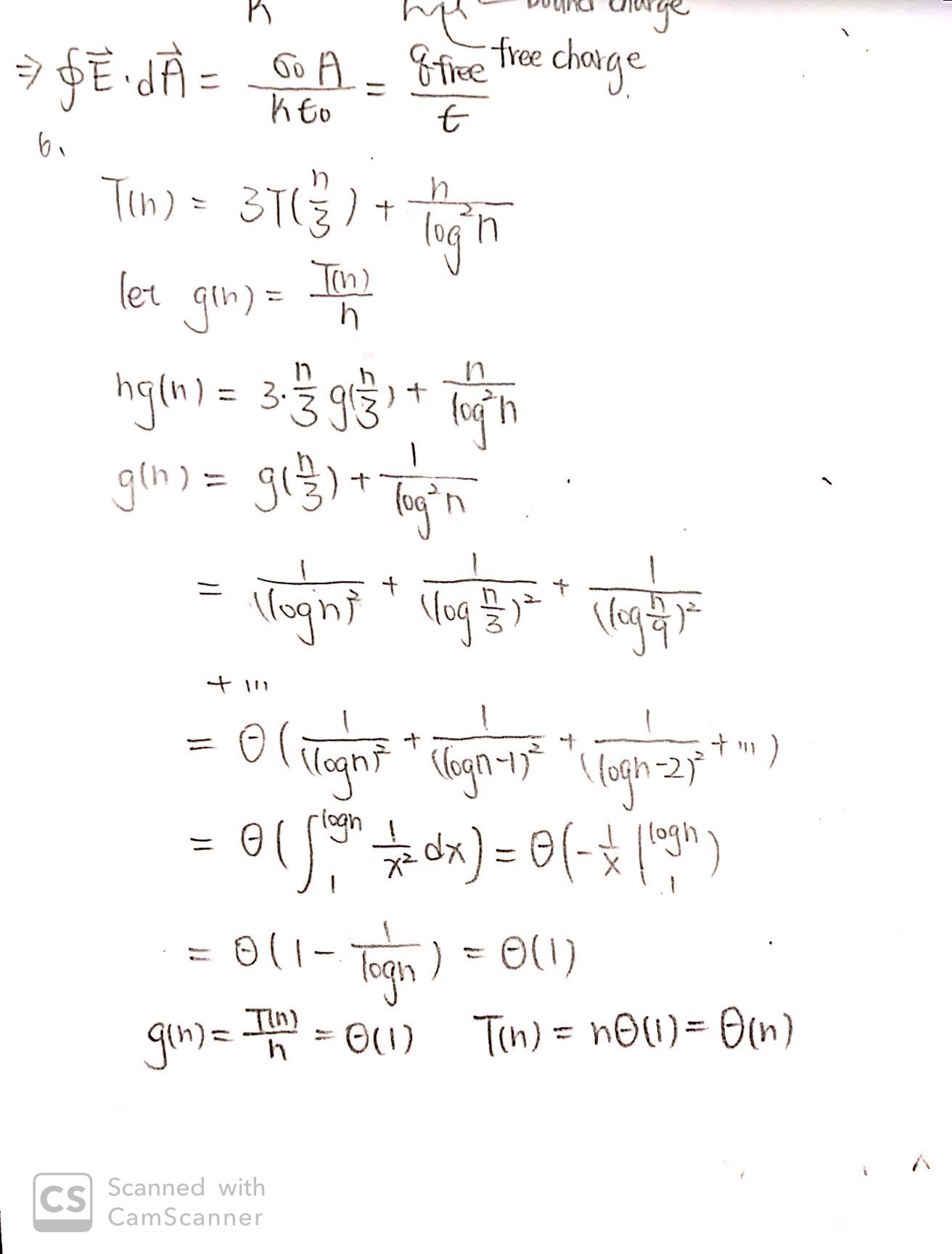


Lower bound



1. (15pts)

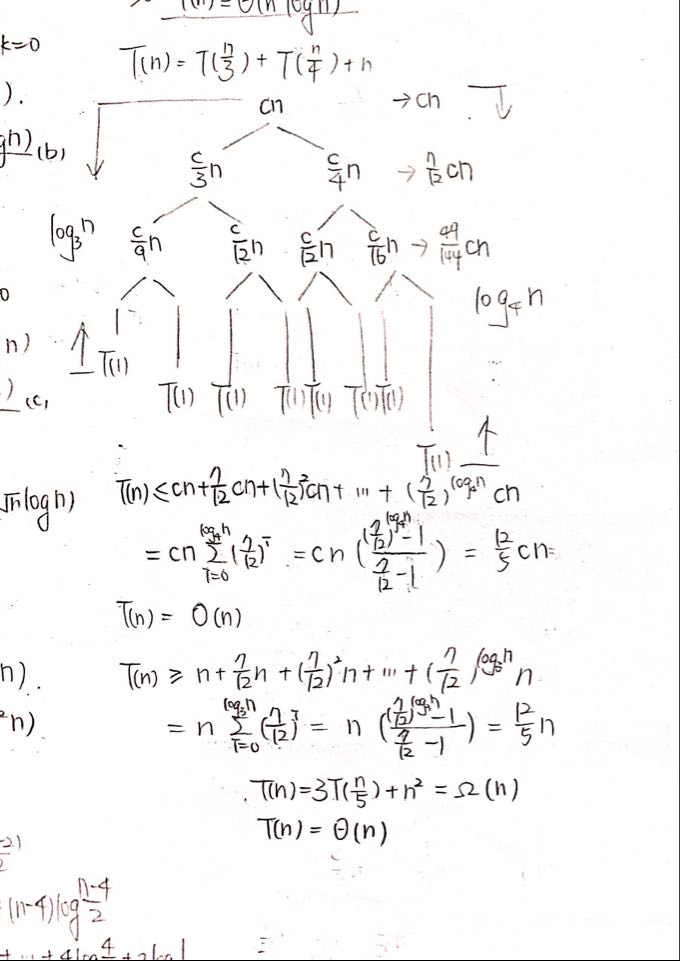
Ans:



Use the recursion-tree method to give asymptotic tight bound() for question 7-8, and justify your answer. (Assume that T(n) is a constant for sufficiently small n.) (Please draw the tree.)

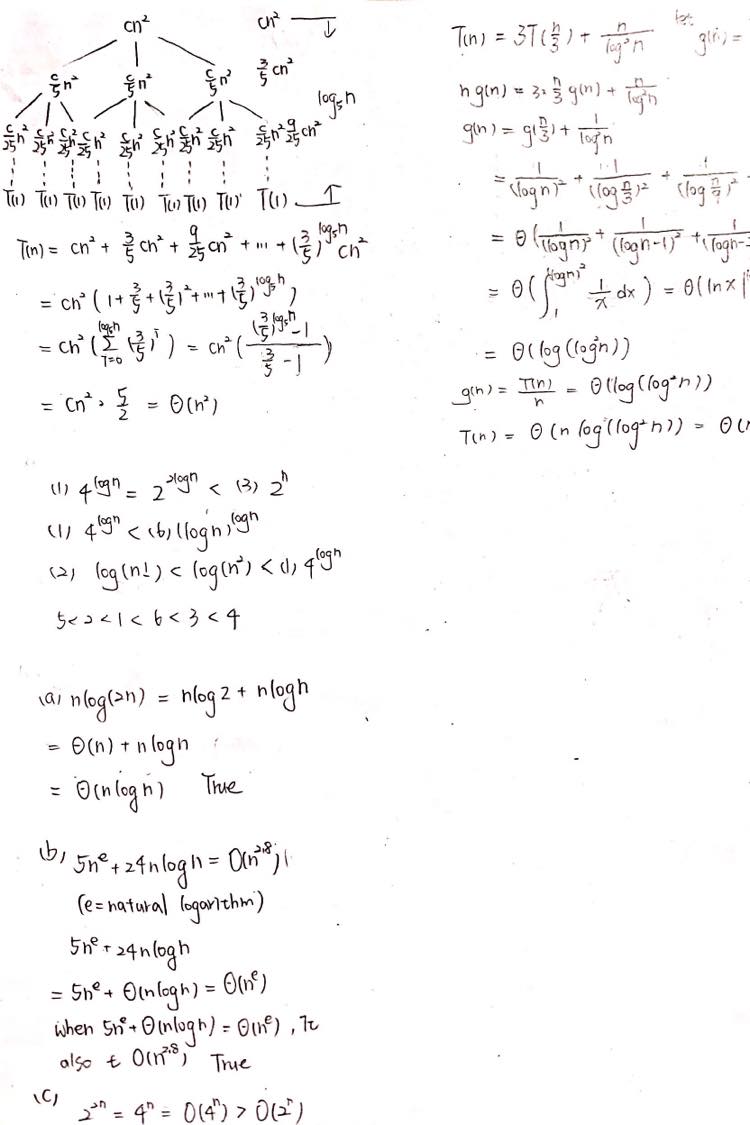
1. (15pts)

Ans:



1. (15pts)

Ans:



1. (15pts) Compare the following time complexity and arrange them in increasing order.

(1)

(2)

(3)

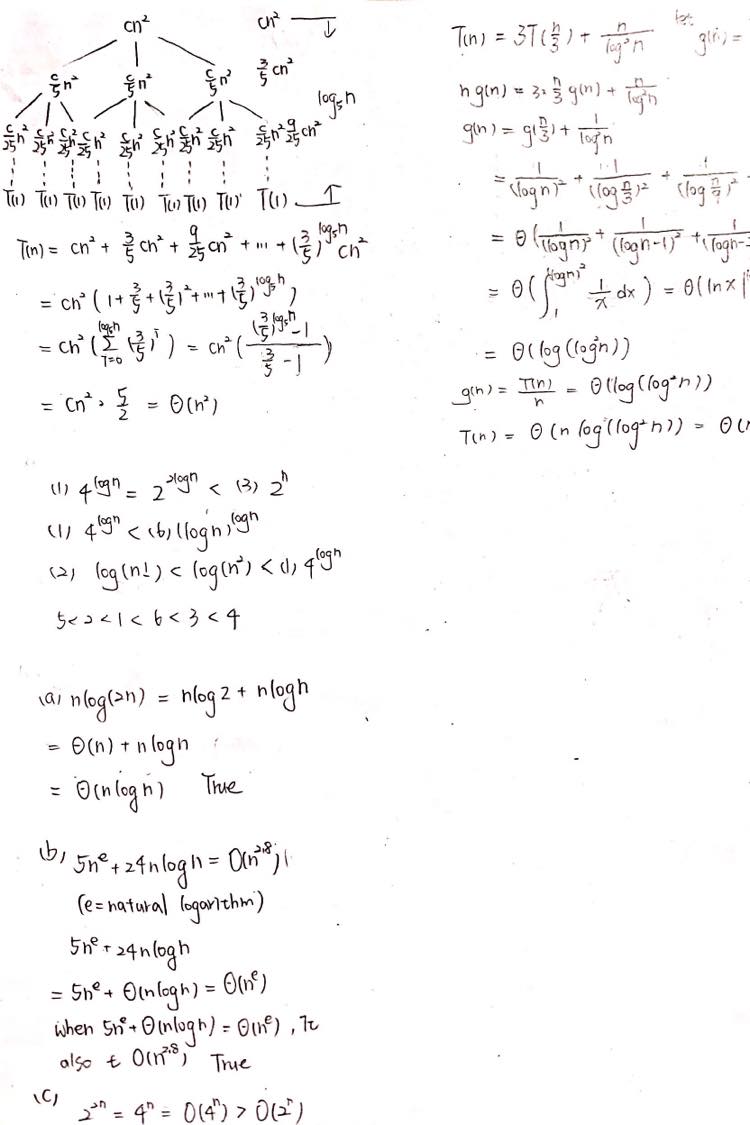
(4)

(5)

(6)

1. 125634
2. 521634
3. 521364
4. 123465

Ans: ( B )



1. (15pts) True or False

(a) n

(b) (e = natural logarithm)

(c)

Ans: True/True/False

