

Quiz 1

Full name:

CSU ID:

Undergraduate/graduate:

Summation for arithmetic sequence: $S_n = \frac{n(a_1 + a_n)}{2}$

n, a_1, a_n : items total number, first value, last value

Summation for geometric sequence: $S_n = \frac{a(1-r^n)}{1-r}$

a, r, n first value common ratio, items total number

Question 1 (6points). For the following functions, please indicate that the first function has the lower, same, or higher order of growth than the second function (please give the procedure, selecting the right option but without procedure will only receive partial credit)

a. (2points) $\log_2^2 n$ and $\log_2 n^2$ Answer (lower/same/higher):

b. (2points) $(n-2)!$ And $n!$ Answer (lower/same/higher):

Question 2 (4 points)

1) what's the problem size and what's the basic operation (1 point)

2) Using $O(n)$ notation to analyze the time complexity (please give the procedure, if you can't conclude the closed-form formula for $O(n)$ but provide critical steps, we will consider to give you partial credit) (3 points)

$a = 0$

$i = 0$

for i in range(0, N):

$j = N$

 while $j > i$:

$a = a + i + j$

$j -= 1$