

CS 230 : Discrete Computational Structures  
Section B

**Spring Semester, 2021**

CLASS ASSIGNMENT #4

THURSDAY, APRIL 1

NAME (LAST, FIRST):

Open notes, open book.

1. [8 Pts] Prove that  $4 + 8 + \cdots + 4n = 2n(n + 1)$ , for all  $n \in \mathbb{Z}^+$  by induction. Let  $P(n)$  be the proposition that we are proving.

(a) State  $P(1)$  and prove it.

(b) State  $P(k)$ . This is what we can assume.

(c) State  $P(k + 1)$ .

(d) Now prove  $P(k + 1)$ .

2. [4 Pts] Give a recursive definition of the sequence  $\{a_n\}$  where  $a_n = 5n + 3$  for  $n = 0, 1, 2, \dots$

3. [4 Pts] Give a recursive definition of the set of positive integer powers of 5.