

CSc 245 Discrete Structures - Summer 2021

Quiz #6

Due: July 27th, 2021 by 11:59 pm (MST)

1. (10 points) Consider the following sequence $\{s_n\}_{n=1}^{\infty}$ of integers: 1, 9, 25, 49, 81, 121, \dots . (Note, the sequence starts at $n = 1$, not $n = 0$).
 - (a) (3 points) Give a simple function $f(n)$ such that $f(n) = s_n$ for $n \in \mathbb{Z}^+$.
 - (b) (1 points) Using your answer to (a), give s_{10} and s_{13} .
 - (c) (6 points) Prove, using weak induction, that $\sum_{i=1}^n f(i) = \frac{4n^3-n}{3}$ where $n \in \mathbb{Z}^+$ and $f(n)$ is the function you identified in (a).