

1. Are the functions

$f(\text{students}) \rightarrow \text{phone number}$

$f(\text{students}) \rightarrow \text{student ID}$

$f(\text{students}) \rightarrow \text{hometown}$

one-to-one?

2. Give examples of functions $f: \mathbb{N} \rightarrow \mathbb{N}$ that are:

a) onto but not one-to-one

b) one-to-one but not onto

c) both

d) neither.

3. Find the set $\{x \in \mathbb{R} : f(x) \leq 4\}$ where $f(x) = x^2$.

4. Find the first five terms of $a_n = a_{n-1} - a_{n-2}$, $a_0 = 2$, $a_1 = -1$.

5. Find the solution to $a_n = 3a_{n-1}$, $a_0 = 2$.

6. compute $\sum_{j=0}^8 3 \cdot 2^j$.

7. compute $\sum_{k=1}^n \frac{1}{k(k+1)}$.