

Assignment_08

Zhang Huakang | D-B92760-6

2.

a) finite

b) countable infinite

$$f(x) = -2k - 1, k \in \mathbb{N}$$

c) finite

d) uncountable

e) countable infinite

	1	2	3	4	...	n
2	(2,1)	(2,2)	(2,3)	(2,4)	...	(2,n)
3	(3,1)	(3,2)	(3,3)	(3,4)	...	(3,n)

(f) countable infinite

$$f(x) = 10k, k \in \mathbb{Z}$$

12.

Proof :

Because $A \subset B$

Let $f : A \rightarrow B, f(x) = x$

So, f is a one to one function.

So, $|A| \leq |B|$

20.

Proof :

Let $f : A \rightarrow B, g : B \rightarrow C$

f and g are one to one and onto functions

Let $h : A \rightarrow C, h = g \circ f$

So, h is one to one and onto function

So, $|A| \leq |C|$

Let $q : C \rightarrow B, p : B \rightarrow A$

q and p are one to one and onto functions

Let $m : A \rightarrow C, m = p \circ q$

So, m is one to one and onto function

So, $|C| \leq |A|$

So, $|A| = |C|$