



SECI1013: DISCRETE STRUCTURE
SEM 1 2023/2024

Name : Evelyn Goh Yuen Qi
Student ID : A23650222
Date : 22/11/2023

Section : 2/3/6/7/9

Marks
9
15

Question 1

[3 Marks]

Fill in the blank with correct properties that relation could be reflexive/ irreflexive/ symmetric/ anti-symmetric/ transitive. (One answer only)

- a. Nothing is related to itself irreflexive (1m)
b. No one-way streets symmetric (1m)
c. Whenever there's a roundabout route, there's a direct route anti-symmetric (1m)

Question 2

[3 Marks]

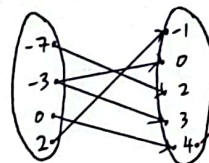
Given the relation $\{(-7,2), (0,4), (2,-1), (-3,0), (-3,3)\}$

a) Domain = $\{-7, -3, 0, 2\}$

Range = $\{-1, 0, 2, 3, 4\}$

- a. State the domain and range of the relation (1m)
b. Determine whether the relation is function and explain (1m)
c. Create a mapping diagram of the relation (1m)

c)



b) The relation is not a function because the object -3 has two image which are 0 and 3.

Question 3

[6 Marks]

Given a pair of functions, $f(x) = 3/(2x+1)$, $g(x) = 2/x$. Find:

- a. $(g \circ f)(x)$
b. Domain of function.

a) $g(f(x)) = 2 \div \frac{3}{(2x+1)}$

$= 2 \times \frac{(2x+1)}{3}$

$g(x) = \frac{2(2x+1)}{3}$

b) $\frac{3}{2x+1} = 1$

$2x+1 = 3$

$2x = 2$

$x = 1$

\therefore Domain of function $f(x)$ is 1 and the domain of function $g(x)$ is 2

$\frac{2}{x} = 1$

$x = 2$

(3m)

(3m)

Question 4

[3 Marks]

Given an arithmetic sequence 5, $37/7$, $39/7$, $41/7$

- a. Find the sequence recursive formula (1m)
b. Write a Pseudo-code for function $a(n)$ (2m)

a) 5, $37/7$, $39/7$, $41/7$, ...
 a_0 a_1 a_2 a_3

$a_n = a_{n-1} + \frac{2}{7}$, $n \geq 1$, $a_0 = 5$

b) if $(n=0)$

{

$a = 5$

}

else

{

$a = a_{n-1} + \frac{2}{7}$

}