

Assignment - 8

Problem 1

1)

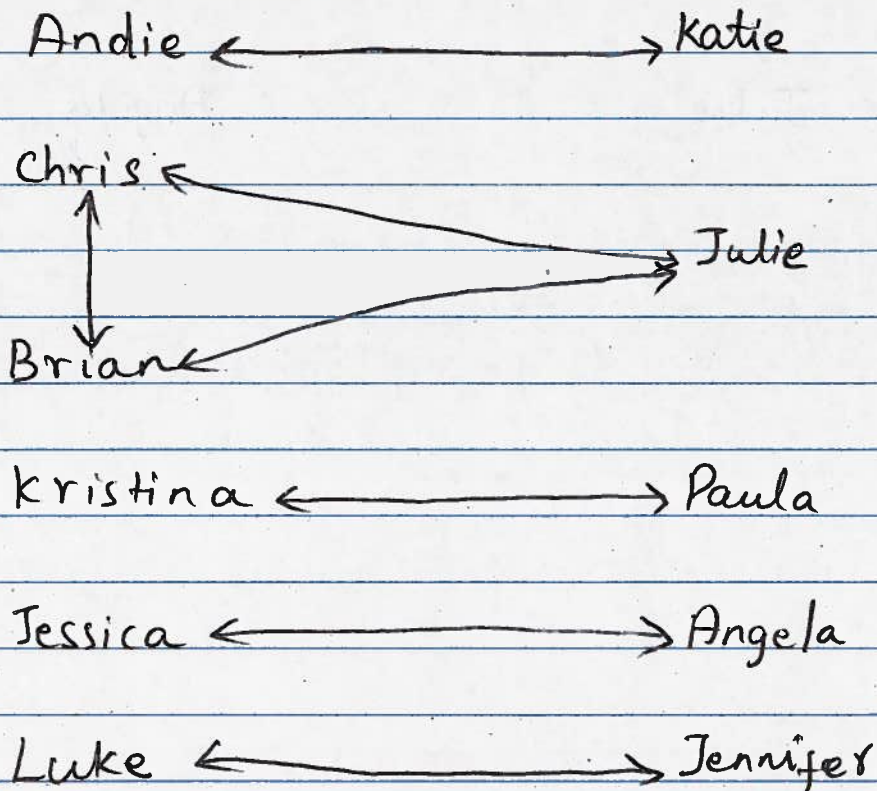
MarriedTo \circ SiblingOf: MarriedTo(SiblingOf(x))

x is brother in law or sister in law

SiblingOf \circ MarriedTo: SiblingOf(MarriedTo(x))

x is brother or sister's spouse

SiblingOf (Arrow diagram)



Relation MarriedTo (Arrow diagram)

Andy \longleftrightarrow Jennifer

Katie \longleftrightarrow Luke

Chris \longleftrightarrow Paula

Brian \longleftrightarrow Jessica

Kristina \longleftrightarrow Client

Julie

Angela

2)

So R - x is a student enrolled in
course c taught by instructor b

Here

x - student

b - instructor

c - course

$$(x, c) \in R \quad \text{and} \quad (c, b) \in S$$

$$(x, b) \in S \circ R$$

3) S - Instructor b is born in town y

$$\begin{aligned} 4) a) (g \circ f)(z) &= g[f(z)] \\ &= g(2z+1) \\ &= (2z+1)^2 - 1 \\ &= 4z(z+1) \end{aligned}$$

$$\begin{aligned} b) (f \circ g)(z) &= f[g(z)] \\ &= f(z^2 - 1) \\ &= 2(z^2 - 1) + 1 \\ &= 2z^2 - 1 \end{aligned}$$

5)

a) It is a function

Reason : Every string in S maps to unique value in Z

[or] Each element in domain has unique value in codomain

b) Not a function

Reason : For any age in domain, there will be more than one people in codomain associated with it

c) Not a function

Reason : Any person in domain can have multiple people in codomain as siblings