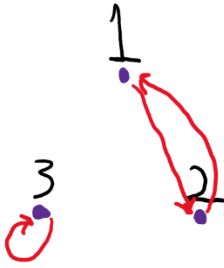


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5.1.1(a)



5.1.4(a)

1	1	1
0	0	0
0	0	0

5.2.1(b)

anti-reflexive – xLx is not true, $x < x$ is not true

anti-symmetric – xLy and yLx are never both true, if $x < y$ then $y < x$ is not true

transitive – if xLy and yLz then xLz , if $x < y$ and $y < z$ then $x < z$

5.2.4(b)

anti-reflexive

anti-symmetric

transitive

5.3.1(a)

2

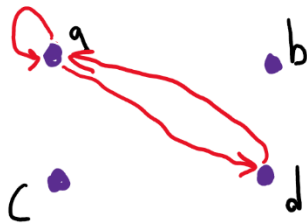
5.3.4(d)

$\langle 1, 2, 3, 1 \rangle$, is a circuit of length one in which no vertex occurs more than once, except the first and last vertex which are the same

5.4.1(c)

$\{(a,a),(a,d),(c,b),(c,c)\}$

5.4.3(a)



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5.5.1(a)
no

5.5.1(c)
no

5.5.4(a)
no

5.5.4(c)
yes

5.5.4(e)
yes

5.6.3(a)
2, 4, 5

5.6.3(d)
yes

5.7.1(a)
j, l, A, F

5.8.1(a)
strict order, it is transitive – if word x comes before word y and word y comes before word z, then word x comes before word z, it is anti-symmetric – if word x comes before word y then word y cannot come before word x

5.8.2(a)
(b,f,c,d,e,a,g)
(b,d,c,f,e,a,g)

5.9.1(b)
yes, it is reflexive – xMx , x has the same mother as x, it is symmetric – xMy and yMx , if x has the same mother as y then y has the same mother as x, transitive – xMy and yMz then xMz , if x has the same mother as y and y has the same mother as z then x and z have the same mother.
The partition can be described by that each class is an individual that is distinct from the rest but shares a mother with the rest, therefore when combined with the other classes forms the “group of people” that is the domain.

5.9.2(a)
{7,31,99}, {2,34}, {13,17}, {4,44,56}

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5.9.5(b)

No, it is not reflexive – $x = 1, y = 2, m = 1$

$1 + 2 = 3$ however $x + x \neq 3m, 1 + 1 \neq 3 * 1$

$2 \neq 3$