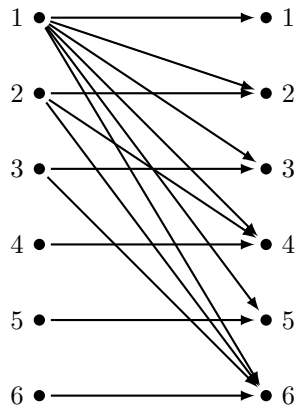
[§9.1] 1e. $\{(0,1),(1,0),(1,1),(1,2),(1,3),(2,1),(2,3),(3,1),(3,2),(4,1),(4,3)\}$

2. (a) $(1,1),(1,2),(1,3),(1,4),(1,5),(1,6),(2,2),(2,4),(2,6),(3,3),(3,6),(4,4),(5,5),(6,6)$

(b)



(c)

R	1	2	3	4	5	6
1	×	×	×	×	×	×
2		×		×		×
3			×			×
4				×		
5					×	
6						×

3. (a) Transitive
   (c) Symmetric
   (e) Reflexive, symmetric, antisymmetric, and transitive
4. (a) Antisymmetric and transitive
   (b) Reflexive, symmetric, and transitive
   (c) Reflexive, symmetric, and transitive
   (d) Reflexive and symmetric
6. (d) Antisymmetric
   (e) Reflexive and symmetric
   (f) Symmetric
7. (a) Symmetric
   (b) Symmetric and transitive
   (c) Symmetric
   (d) Reflexive, symmetric, and transitive

(e) Reflexive and transitive

(f) Reflexive, symmetric, and transitive

(g) Antisymmetric

(h) Antisymmetric and transitive

10. (a) $\{(0,0),(1,1),(2,2)\}$ on $\{0,1,2\}$

(b) $\{(0,1),(1,0),(0,2)\}$ on $\{0,1,2\}$

34. (a) R_6

(b) R_2

(c) R_5

(d) $\emptyset$

(e) $\emptyset$

(f) R_5

(g) R_6

(h) R_6

40. (a) $\{(a,b) \mid a$ divides or is a multiple of $b\}$

(b) $\{(a,b) \mid a$ divides and is a multiple of $b\}$

(c) $\{(a,b) \mid a$ divides but is not a multiple of $b\}$

(d) $\{(a,b) \mid a$ does not divide but is a multiple of $b\}$

(e) $\{(a,b) \mid a$ divides or is a multiple of b, but not both$\}$

[§9.5] 1. (a) Yes

(b) No — lacking reflexivity and transitivity

(c) Yes

3. (a) Yes

(b) No — lacking transitivity

(c) No — lacking reflexivity, symmetry, and transitivity

(d) Yes

(e) No — lacking reflexivity and transitivity