Jennifer Cafiero

CS 135 HW 7

I pledge my honor that I have abided by the Stevens Honor System.
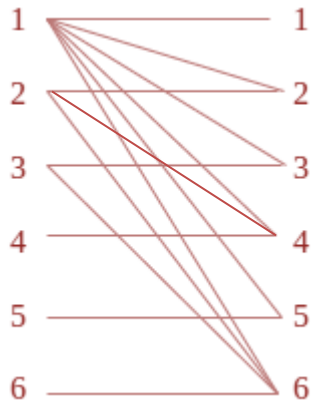
Section 9.1

1.
  a. {(0,0), (1,1), (2,2), (3,3)}

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.

3.
  a. Transitive
  b. Reflexive, transitive, symmetric
  c. Symmetric
  d. Antisymmetric
  e. antisymmetric, reflexive, symmetric, transitive

4.
  a. antisymmetric, transitive
  b. reflexive, symmetric, transitive
  c. reflexive, symmetric, transitive
  d. reflexive, symmetric

30.
  a. {(1,2), (2,3),(3,4), (1,1), (2,1), (2,2), (3,1), (3,2), (3,3)}
  b. {(1,2), (2,3), (3,4)}
  c. {}
  d. {(1,1), (2,1), (2,2), (3,1), (3,2), (3,3)}

32. S o R = {(1,1), (1,2), (2,1), (2,2)}
    R o S = {(2,2), (2,3), (3,2), (3,3), (3,4), (2,1)}

Section 9.3

2.

c.
$$\begin{array}{cccc} 0 & 1 & 1 & 1 \\ 1 & 0 & 1 & 1 \\ 1 & 1 & 0 & 1 \\ 1 & 1 & 1 & 0 \end{array}$$

4.

a. {(1,1), (1,2), (1,4), (2,1),(2,3),(3,2),(3,3),(3,4),(4,1),(4,3),(4,4)}

15.

a.
$$\begin{bmatrix} 0 & 0 & 1 \\ 1 & 1 & 0 \\ 0 & 1 & 1 \end{bmatrix}$$

b.
$$\begin{bmatrix} 1 & 1 & 0 \\ 0 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$$

24. {(a,a), (a,c), (b,a), (b,b), (b,c), (c,c)}

Section 9.4

1.

a. { (0,0), (0, 1), (1, 1), (1, 2), (2, 0), (2, 2), (3, 0), (3, 3) }

b. { (0,1), (0, 2), (0, 3), (1,0), (1,1), (1, 2), (2,0), (2,1), (2,2), (3,0)}

26.

a. {(a,c), (b,d), (c,a), (d, b), (e,d), (a,a), (b,b), (c,c), (c,a), (d,d), (d,b), (e,b), (e,d), (a,c)}

b. {(b,c), (b,e), (c,e), (d,a), (e,b), (e,c), (b,b), (c,b), (c,c), (e,e)}