

0.1

- a. including all the positive odd numbers
- b. including all the even numbers
- c. including all the positive even numbers and 0
- d. including all the positive even numbers, 0, and multiple of 3
- f. w is a string consists of 0 and 1, if we reverse the string w, we can still get the same w
- e. this set is empty set ϕ , because we can not find the integer has this kind of property

0.2

- a. $\{1, 10, 100\}$
- b. $\{n | n \in \mathbb{N} \text{ and } n > 5\}$
- c. $\{n | n \in \mathbb{N} \text{ and } n < 5\}$
- d. $\{\text{"aba"}\}$
- e. $\{\epsilon\}$
- f. ϕ

0.3

- a. No
- b. Yes
- c. $\{x, y, z\}$
- d. $\{x, y\}$
- e. $\{(x, x), (x, y), (y, x), (y, y), (z, x), (z, y)\}$
- f. $\{\phi, \{x\}, \{y\}, \{x, y\}\}$

0.4

ab, because each element in A pair with each element in B, so we have ab elements in total

0.5

2^c , consider each subset consist of 1 elements, 2 elements, 3 elements,..., c elements. So we have $C_c^1 + C_c^2 + C_c^3 + \dots + C_c^c = 2^c$

0.6

a. 7

b. domain: $\{1,2,3,4,5\}$ range: $\{6,7\}$

c. 6

d. domain: $\{(1,6),(1,7),(1,8),(1,9),(1,10),(2,6),(2,7),(2,8),(2,9),(2,10),$
 $(3,6),(3,7),(3,8),(3,9),(3,10),(4,6),(4,7),(4,8),(4,9),(4,10),(5,6),(5,7),(5,8),(5,9),(5,10)\}$
 range: $\{6,7,8,9,10\}$

e. 8

0.7

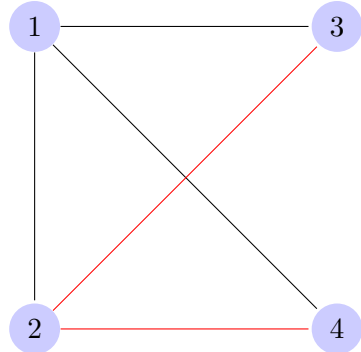
Let $A = \{1,2,3,4\}$

a. The relation $R = \{(1,1),(2,2),(3,3),(4,4),(2,1),(1,2),(3,2),(2,3)\}$ is reflexive and symmetric, but not transitive, because $(1,2) \in R$ and $(2,3) \in R$ but $(1,3) \notin R$.

b. The relation $R = \{(1,1),(2,2),(3,3),(4,4),(1,2)\}$ is reflexive and transitive, but not symmetric because $(1,2) \in R$ but $(2,1) \notin R$.

c. The relation $R = \{(1,1),(2,2),(3,3)\}$ is symmetric and transitive, but not reflexive, because $4 \in A$ but $(4,4) \notin R$.

0.8



node	degree
1	3
3	2

Path: $3 \rightarrow 2 \rightarrow 4$

0.9

$(\{1,2,3,4,5,6\}, \{(1,4), (1,5), (1,6), (2,4), (2,5), (2,6), (3,4), (3,5), (3,6)\})$