CS 3530: Assignment 0c

Fall 2023

Your Name Here

Exercise 0.6abcde (10 points)

Problem

Let X be the set $\{1, 2, 3, 4, 5\}$ and Y be the set $\{6, 7, 8, 9, 10\}$. The unary function $f : X \to Y$ and the binary function $g : X \times Y \to Y$ are described in the following tables.

n	$f(n)$
1	6
2	7
3	6
4	7
5	6

g	6	7	8	9	10
1	10	10	10	10	10
2	7	8	9	10	6
3	7	7	8	8	9
4	9	8	7	6	10
5	6	6	6	6	6

a. What is the value of $f(2)$?

Solution

7

b. What are the range and domain of f?

Solution

Domain: 1-5, Range: 6,7

c. What is the value of $g(2, 10)$?

Solution

6

d. What are the range and domain of g?

Solution

Domain: 1-10, Range: 6-10

e. What is the value of $g(4, f(4))$?

Solution

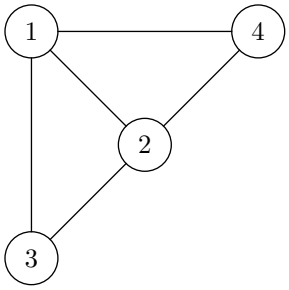
8

Exercise 0.8 (5 points)

Problem

Consider the undirected graph $G = (V, E)$ where V, the set of nodes, is $\{1, 2, 3, 4\}$ and E, the set of edges, is $\{\{1, 2\}, \{2, 3\}, \{1, 3\}, \{2, 4\}, \{1, 4\}, \}$. Draw the graph G.

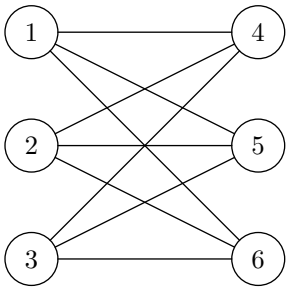
Solution



Exercise 0.9 (5 points)

Problem

Write a formal description of the following graph.



Solution

Graph C, where V, the set of nodes, is $\{1, 2, 3, 4, 5, 6\}$ and E, the set of edges, is $\{\{1, 4\}, \{1, 5\}, \{1, 6\}, \{2, 4\}, \{2, 5\}, \{2, 6\}, \{3, 4\}, \{3, 5\}, \{3, 6\}\}$.