151 Discrete Mathematics
K. Rosen, Discrete Mathematics and Its Applications, 7th edition

Chapter 1

1.1. Ex.1, Ex.2, Def.1, Ex.3, Ex.4, Def.2, Ex.5, Def.3, Ex.6, Def.5, Ex.7, converse, contrapositive, inverse, Def.6, Ex.10, Ex.11, precedence of logical operators.

1.3. Def.1, Ex.1, Def.2, Ex.2, Ex.3, Ex.4, Table 6, Table 7, Table 8, Ex.5, Ex.6, Ex.7, Ex.8.

1.4. Ex.1, Ex.2, Ex.3, Ex.4, Ex.5, $P(x_1, x_2, \cdots, x_n)$, Def.1, Ex.8, Ex.9, Ex.10, Ex.11, Ex.13, Def.2, Ex.14, Ex.15, Ex.16, Ex.17, negating expressions, Table 2, Ex.21, Ex.22.

1.6. Def.1, Ex.2. Write the followings using the argument form and check if the argument is valid: Ex.3, Ex.4, Ex.5, Ex.6, Ex.7, Ex.8, Ex.9, Ex.10, Ex.11.

1.7. Def.1, Ex.1, Ex.2, Ex.3, Ex.4, Ex.5, Ex.6, Def.2, Ex.7, Ex.8, Ex.10, Ex.11, Ex.12, Ex.13, Ex.14, Ex.15, Ex.18.

1.8. Ex.1, Ex.3, Ex.4, Ex.6, Ex.7, Ex.9, Ex.10, Ex.13, Ex.17.

Chapter 2

2.1. Def.1, Ex.1, Ex.2, Ex.3, Ex.4, definitions for $\mathbb{N}$, $\mathbb{Z}$, etc., definitions for intervals, Def.2, Ex.6, Ex.7, Def.3, Ex.8, Ex.9, Th.1, Def.4, Ex.10, Def.5, Ex.13, Def.6, Ex.14, Ex.15, Def.8, Ex.17, Ex.18, Ex.20.

2.2. Def.1, Ex.1, Def.2, Ex.3, Def.3, Ex.5, Def.4, Ex.6, Def.5, Ex.9, Table 1, Def.6, Def.7, Ex.15.

Chapter 5

5.1. Ex.1, Ex.2, Ex.3, Ex.4, Ex.5, Ex.6, Ex.8, Ex.10, Ex.11.

5.2. Ex.2.

Q.1. Let $\{a_n\}$ be a sequence defined inductively as:

$$a_1 = 1, a_2 = 2, a_{n+1} = 2a_n + a_{n-1}, \quad \forall\, n \geq 2.$$

Prove that $a_n \leq \left(\frac{5}{2}\right)^n$, for all $n \geq 1$.

Chapter 9

9.1. Ex.2, Ex.3, Def.2, Ex.4, Ex.5, Def.3, Ex.7, Ex.8, Ex.9, Def.4, Ex.10, Ex.11, Ex.12, Def.5, Ex.13, Ex.14, Ex.15, Ex.17, Ex.18, Ex.19, Def.6, Ex.20, Ex.21, Def.7, Ex.22, Th.1 (no proof).

9.3. Def.1, Ex.7, Ex.8, Ex.9, Ex.10.

9.4. Ex.1, Ex.2, Def.2.

Q.1. If $R = \{(1,1), (2,1), (3,2), (4,3)\}$ is a relation on the set $A = \{1, 2, 3, 4\}$, find R^*.

9.5. Def.1, Def.2, Ex.1, Ex.2, Ex.3, Ex.4, Ex.6, Ex.7, Def.3, Ex.8, Ex.9, Th.1 (no proof), Ex.12, Ex.14.

9.6. Def.1, Ex.1, Ex.2, Ex.3, Ex.4, Def.2, Ex.5, Def.3, Ex.6, Ex.7, Hasse diagrams, Ex.12, Ex.13.

Chapter 10

10.1. All until graph models (which is not included).

10.2. Def.1, Def.2, Def.3, Ex.1, Th.1, Ex.3, Th.2 (no proof), Def.4, Ex.5, Ex.6, Ex.7, Def.6, Ex.9, Ex.10, Ex.11, Ex.13, Def.7, Def.8, Ex.18, removing vertices from a graph.

10.3 Ex.1, Def.1, Ex.8, Ex.9, Ex.10.

10.4. Def.1, Ex.1, Def.2, Def.3, Ex.4, Th.1 (no proof), Ex.5.

10.7. Def.1, Ex.1, Ex.2, Ex.3, Th.1 (no proof), Ex.4, Cor.1 (no proof), Cor.2 (no proof), Ex.5, Cor.3, Ex.6.

Chapter 11

11.1. All section is needed, except: Ex.5, Ex.6, Ex.7, Ex.8, Ex.9, Th.3, Th.4, Th.5, Cor.1. No proofs for Th.1 and Th.2.

11.2. Ex.1.

11.4. Def.1, Ex.1.

Chapter 12

12.1. Ex.1, Ex.2, Ex.3, Ex.4, Ex.5, Ex.8, Table 5, Ex.9, Ex.10, Ex.11, Ex.12, Def.1.

12.2. Ex.1, Ex.2, Ex.3, Def.1, only the definition of sum of products; functional completeness is not included.

12.3. All section, except Ex.2 and adders.

12.4. Ex.1, Ex.2, Ex.3, Ex.4 and all definitions up to pag. 835.