

Recommended Questions - Weeks 1 & 2

Directions

These are recommended questions from week 1 and 2 of the course. The questions are from section handouts, and the Rosen and Velleman textbooks. Try to solve these problems on your own before asking for help or looking at solutions. Note: solutions to section handouts are posted online and solutions to some of the book problems can be found in the back of the textbooks. Page numbers for the 7th edition of Rosen and Velleman are also listed in parentheses beside the questions.

Propositional Logic

Section: (Section 1) Translations , (Section 2) Teatime

Rosen: 1.1.13 - 1.1.14 (13-14), 1.2.1 - 1.2.6 (22), 1.2.8 (22)

Velleman: 1.1.5 - 1.1.6 (14), 1.5.1 - 1.5.3 (53-54)

Logical Equivalences

Section: (Section 2) Equivalences part (b)

Rosen: 1.3.11 - 1.3.12 (35), 1.3.22 - 1.3.28 (35), 1.3.30 (35)

Velleman: 1.2.8 - 1.2.9 (without truth tables) (24), 1.5.5 - 1.5.7 (54)

Boolean Algebra & Canonical Forms

Section: (Section 2) Canonical Forms

Rosen: 12.2.3 (822), 12.2.5 (822), 12.2.8 (822), 12.2.11 (822)

Predicate Logic

Section: (Section 2) Translate to Logic, Positively Different, Translator

Rosen: 1.4.9 - 1.4.10 (53), 1.4.23 - 1.4.24 (54), 1.4.32 - 1.4.34 (55), 1.4.40 - 1.4.41 (55), 1.5.8 - 1.5.11 (65), 1.5.30 - 1.5.33 (67), 1.5.36 - 1.5.38 (68)

Velleman: 2.1.1 - 2.1.2 (63), 2.1.4 (63), 2.1.6 - 2.1.7 (64)

Recommended Questions - Weeks 3 & 4

Directions

These are recommended questions from week 3 and 4 of the course. The questions are from section handouts, and the Rosen and Velleman textbooks. Try to solve these problems on your own before asking for help or looking at solutions. Note: solutions to section handouts are posted online and solutions to some of the book problems can be found in the back of the textbooks. Page numbers for the 7th edition of Rosen and Velleman are also listed in parentheses beside the questions.

More Predicate Logic & Inference Proofs

Section: (Section 3) Translate to Logic, Formal Proofs

Rosen: 1.6.27 - 1.6.29 (80)

More English Proofs

Rosen: 1.7.1 - 1.7.3 (91), 1.7.5 - 1.7.8 (91)

Set Proofs

Section: (Section 4) Set = Set

Rosen: 2.1.25 - 2.1.27 (126), 2.1.31 (126), 2.1.38 - 2.1.40 (126), 2.2.5 - 2.2.10 (136), 2.2.15 (136), 2.2.18 - 2.2.20 (136), 2.2.40 - 2.2.41 (137)

Velleman: 1.4.5 (42), 1.4.7 - 1.4.9 (42), 1.4.13 - 1.4.14 (43), 2.3.10 - 2.3.11 (82)

Modular Arithmetic

Section: (Section 4) Modular Arithmetic

Rosen: 4.1.6 - 4.1.8 (244), 4.1.15 - 4.1.16 (244), 4.1.24 - 4.1.25 (245), 4.1.34 - 4.1.36 (245),

Recommended Questions - Weeks 5 & 6

Directions

These are recommended questions from week 5 and 6 of the course. The questions are from section handouts, and the Rosen and Velleman textbooks. Try to solve these problems on your own before asking for help or looking at solutions. Note: solutions to section handouts are posted online and solutions to some of the book problems can be found in the back of the textbooks. Page numbers for the 7th edition of Rosen and Velleman are also listed in parentheses beside the questions.

Induction

Section: (Section 5) Induction, (Section 6) Dividing By Nines, Those 2s Just Grow Up So Fast, Proof by Harmonicas

Rosen: 5.1.3 - 5.1.4 (329), 5.1.12 - 5.1.17 (330), 5.1.25 - 5.1.27 (330), 5.1.29 - 5.1.30 (330), 5.1.31 - 5.1.37 (330), 5.1.38 - 5.1.46 (330 - 331)

Velleman: 6.1.1 - 6.1.3 (265), 6.1.5 (265), 6.1.9 - 6.1.11 (266)

Strong Induction

Rosen: 5.2.3 - 5.2.4 (341), 5.2.9 (342)

Velleman: 6.4.4 (296), 6.4.6 (296), 6.4.10 - 6.4.11 (298)

Structural Induction

Section: (Section 7) Structural Induction, Meta-mathematical

Rosen: 5.3.43 - 5.3.44 (359)

Recommended Questions - Weeks 7 & 8

Directions

These are recommended questions from week 7 and 8 of the course. The questions are from section handouts, and the Rosen and Velleman textbooks. Try to solve these problems on your own before asking for help or looking at solutions. Note: solutions to section handouts are posted online and solutions to some of the book problems can be found in the back of the textbooks. Page numbers for the 7th edition of Rosen and Velleman are also listed in parentheses beside the questions.

Regular Expressions

Section: (Section 7) Regular Expressions

Context Free Grammars

Section: (Section 8) CFGs

Rosen: 13.1.14 - 13.1.15 - find a CFG for the languages described (856), 13.1.20 (857), 13.1.29a (857)

Velleman:

Finite State Automata

Section: (Section 8) DFAs Stage 1, DFAs Stage 2

Rosen: 13.2.7 - 13.2.19 (864 - 865), 13.3.23 - 13.3.36 (876)

Recommended Questions - Weeks 9 & 10

Directions

These are recommended questions from week 9 and 10 of the course. The questions are from section handouts, and the Rosen and Velleman textbooks. Try to solve these problems on your own before asking for help or looking at solutions. Note: solutions to section handouts are posted online and solutions to some of the book problems can be found in the back of the textbooks. Page numbers for the 7th edition of Rosen and Velleman are also listed in parentheses beside the questions.

NFAs

Section: (Section 9) NFAs

Rosen: 13.3.43 - 13.3.49 (877), 13.3.50 - 13.3.55 (877), 13.3.56 (877)

Irregularity

Section: (Section 9) Irregularity, Quick Check

Rosen: 13.4.31 (888)

Minimization

Section: (Section 9) DFAs & Minimization

Rosen: 13.3.62 - construct a minimization for the DFA given (878), Minimize the DFAs in the following problems 13.3.16 - 13.3.22 (876)

Cardinality & Countability

Section: (Section 10) Cardinality

Rosen: 2.5.1 - 2.5.4 (176), 2.5.10 - 2.5.11 (176), 2.5.15 - 2.5.16 (176), 2.5.18 - 2.5.21 (177) **Velleman:** 7.1.15 - 7.1.16 (313), 7.2.1 (321)