

CSCI 1323 (Discrete Structures), Spring 2013

Homework 2

Credit: 20 points.

1 Reading

Be sure you have read sections 1.3 and 1.4 of the textbook.

2 Problems

Do the following problems. You do not need to turn in answers for the ones marked “Not to turn in”. Most such problems will be those for which the textbook provides an answer in the back of the book, so you can check your work.

Notice that some of these problems ask you to first decide whether a wff is a valid argument and then either prove that (if it’s true) or find an interpretation in which it is false.

1. (Not to turn in.) Do problem 2, parts (c) and (d), on p. 43 of the textbook.
2. (5 points) Do problem 2, parts (e), (f), (g), and (h), on p. 43 of the textbook.
3. (Not to turn in.) Do problem 5, part (a), on p. 44 of the textbook.
4. (Not to turn in.) Do problem 9, parts (a) and (b), on pp. 44–45 of the textbook.
5. (Not to turn in.) Do problem 15, parts (a) and (b), on p. 46 of the textbook.
6. (5 points) Using the predicate symbols shown and appropriate quantifiers, write each English-language statement as a predicate wff. (The domain is the whole world.)

$W(x)$ is “ x is a positive integer.”

$P(x)$ is “ x is prime.”

$G(x, y)$ is “ $x \geq y$.”

- Some positive integers are prime.
 - Not all positive integers are prime.
 - For every positive integer n , there is a positive integer m such that m is prime and $m \geq n$.
 - There is a largest prime.
7. (Not to turn in.) Do problem 25, part (a), on p. 49 of the textbook.
 8. (Not to turn in.) Do problem 8 on p. 61 of the textbook.
 9. (Not to turn in.) Do problem 10 on p. 61 of the textbook.
 10. (Not to turn in.) Do problem 15 on p. 61 of the textbook.

11. (5 points) Do problem 17 on p. 62 of the textbook.
12. (5 points) Do problem 19 on p. 62 of the textbook.
13. (Not to turn in.) Do problem 24 on p. 62 of the textbook.
14. (Not to turn in.) Do problem 32 on p. 62 of the textbook.