

Homework 13

via Gradescope

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- Failure to submit homework correctly will result in zeroes.
 - Handwritten homework is OK. You do not have to type up your work.
 - Problems assigned from the textbook are from the 5th edition.
 - No late homework accepted. Lateness due to technical issues will not be excused.
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1. (0 points) Section 8.5 #1(c)(d).
2. (0 points) Define the relation R_1 on \mathbb{Z} such that, for every $m, n \in \mathbb{Z}$,

$$m R_1 n \iff m + n \in 2\mathbb{Z}.$$

Supply a proof or disproof directly from the definitions for the following properties of the relation R_1 above.

- (a) Is R_1 reflexive?
 - (b) Is R_1 antisymmetric?
 - (c) Is R_1 transitive?
 - (d) Is R_1 a partial order relation?
3. (0 points) Define the relation R_2 on \mathbb{R} such that, for every $x, y \in \mathbb{R}$,

$$x R_2 y \iff x^2 \leq y^2.$$

Supply a proof or disproof directly from the definitions for the following properties of the relation R_2 above.

- (a) Is R_2 reflexive?
 - (b) Is R_2 antisymmetric?
 - (c) Is R_2 transitive?
 - (d) Is R_2 a partial order relation?
4. (0 points) Section 8.5 #10, 13, 15.
 5. (0 points) Section 8.5 #16(b), 17(b).
 6. (0 points) Section 8.5 #20.

7. (0 points) Section 8.5 #23, 25.
8. (0 points) Section 8.5 #30(c)(d).
9. (0 points) Section 8.5 #33.
10. (0 points) Section 8.4 #4.
11. (0 points) Section 8.4 #5, 6.
12. (0 points) Section 8.4 #9.
13. (0 points) Section 8.4 #13(a).