CSC/MAT-220: Discrete Structures
EFY 3

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An Interesting Relation. Let R be a relation from $\mathbb{N} \times \mathbb{N}$ to $\mathbb{N}$ defined by

$$R = \{((72, 99), 27),\ ((27, 45), 18),\ ((18, 39), 21),\ ((21, 36), x),\ ((x, 28), 13),\ ((13, 21), 7)\}.$$

Give a formal description of the pattern in this relation and use your description to find the value of the variable x.

More on Even and Odd Integers. In the game of chess, is it possible for the knight to go (by allowable moves) from the lower left-hand corner of the board to the upper right-hand corner, and in the process to land exactly once on each square?

Give a detailed explanation of your answer that includes mathematical variables to make your argument both clear and concise.