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CS 225 – Discrete Structures in CS

Homework 5, Part 2

Sect 5.4, problems 2, 3 , 7 and the problem from canvas

2. We must show that

3.

7.

Canvas question: Let P(n) be the statement that a postage of n cents can be formed using just  4-cent and 5-cent stamps."  Use strong mathematical induction to prove that P(n) is true for

n ≥ 12.  Answer the following questions to show a complete proof -

1. Show that the statements P(12), P(13), P(14), and P(15) are true, completing the basis step of the proof.
   1. P(12): 12=3(4)
   2. P(13): 13=2(4)+1(5)
   3. P(14): 14=1(4)+2(5)
   4. P(15): 15=3(5)
2. What is the inductive hypothesis of the proof?
   1. We can form  cents of postage using just 4-cent or 5-cent stamps, for all

cents of postage. That means is true, for all .

1. What do you need to prove in the inductive step?
   1. Prove that P(k+1) holds true.
2. Complete the inductive step for k ≥ 15.’
   1. Not sure what you want here