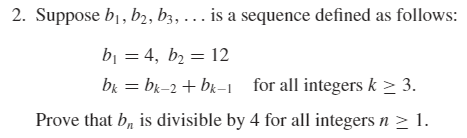
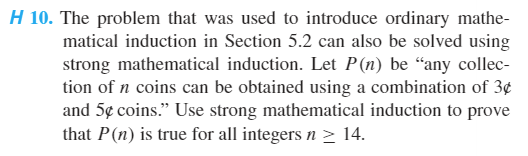
**Assignment 5 – Part 2  
p305 Set 5.4 - 2, 10**



**2.) Let be is divisible by 4 for all integers   
Show that P(0) and P(1) are true:  
P(0)=4, which is divisible by 4 because 4 = 4\*1  
P(1)=12, which is divisible by 4 because 12 = 4\*3  
Suppose is divisible by 4 for all integers from 1 through :  
 is divisible by 4 for all integers with   
By definition of divisibility  
 where is some integer.  
We must show that  
 is divisible by 4  
By substitution  
By our assumption we know that is also divisible by 4. Thus by substitution  
Thus we have shown that is divisible by 4. Since we have proved the basis step and the inductive step, we conclude that the proposition is true.**



**10.) Show that are true:  
[Suppose is true for a particular but arbitrarily chosen integer . That is:]  
 can be obtained using 3 and 5 coins.  
[We must show that is true. That is:] We must show that can be obtained using 3 and 5 coins.  
Case 1 (There is a 5 coin among those used to make up the k.)  
In this case replace the 5 coin by two 3 coins; the result will be Case 2 (There is not a 5 coin among those used to make up the k.)  
In this case, because , at least three 3 coins must have been used. So remove three 3 coins and replace them by two 5 coins; the result will be .  
Thus in either case can be obtained using 3 and 5 coins [as was to be shown.]**