**MATH 453 HW 08**

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1. Sec 3.4 # 8

, therefore, is the for

1. Sec 3.4 # 9

, therefore

1. Sec 3.5 #1
2. Define for the sequence . Begin with the recurrence and multiply the whole thing by :

Next, sum over to get

On the left side

On the right side, factor out from the first term to remove the constant and to make the indices on and agree. Then the remaining sum is just :

The second term is:

Therefore, we get:

Solve for and we get

Then

1. Similar to part (a) but with different and coefficient, we get:

Solve for and we get

Then

1. c
2. d
3. e
4. Sec 3.5 #2

Define as the of this sequence and multiply the recurrence by to get

Sum over the values of n for which the recurrence is defined:

Left side:

Right side, factor out from the first term and we get:

And the second term is

Therefore, and solve for , we get:

Therefore

1. Sec 3.5 #4
2. Sec 3.6 #1

, plug in and we get

1. Sec 3.6 #3

Let

The right-hand side is:

Then

Solve for and :

From equation (1) we get equation (3):

replace with in equation (2):

Therefore,

1. Sec 3.6 #6

The recurrence relation for should be

The of he sequences is

Factor the quadratic into the form for numbers and and we get and , clearly, . Then define and , therefore,