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Assignment 11

1. What is a sequence? Give 2 example of if?

* Sequence is called a solution of a recurrence relation if it terms satisfy the recurrence relation (we write the term of a sequence as: u1, u2, u3, …., un-1, un, un, un+1, ..)
* Example:
* 2 4 6 8 10
* 1 3 5 7 9 11

1. How many ways to define the terms of a sequence? What are they?

* The terms of a sequence can then defined two ways:
* They are:
* Using a formula for the nth term, un in terms of the value n;
* OR by expressing each term using the previous term(s) in the sequence. This is called a Recurrence Relation.

1. What is a recurrence relation? Give 2 examples of it?

* Recurrence relation is for the sequence {an} is an equation that expresses an is terms of one or more of the previous terms of the sequence, namely, a0, a1, …,an-1 for all integer n with n>=n0 where n0 is a nonnegative integer.
* Example1: un+1=un+6 for u1=4
* U2= u1+6=4+6=10
* U3= u2+6=10+6=16
* Example2: we have un+1 = un + un-1 and u1=0 u2=1
* u3 = u2 + u1 = 1+0 =1
* u4 = u3 + u2 = 1+1 =2

1. How do we solve recurrent equation?

* We solve recurrence equation means to search for the explicit formula corresponding to the recurrence relation or by:
* Motivation: prefer to have an explicit formula to compute the value of rather than conducting n iterations.
* Type of recurrence relations and solutions: focus on solving linear and non-linear recurrence relation of degree k.

1. What is the difference between linear recurrence relation of degree 1 and k?

Linear recurrence relation of degree 1 and k are difference:

* Degree 1:

an = c.an-1 + b

* Degree k:

an = c1.an-1 + c2.an-2+ c3.an-3 +… + ck.an-k ; c1, c2, c3,…, ck  are real numbers and ck ≠ 0. where k = 1, 2, 3,…