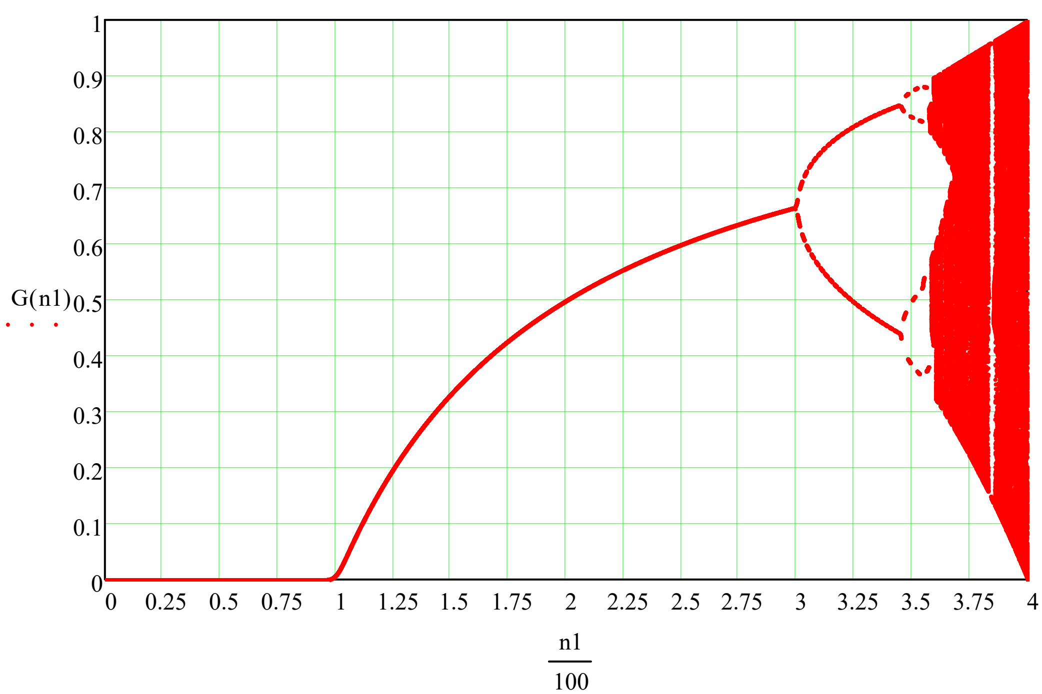
Fibonacci function/sequence --> Logistic Difference Equation

Let: $n1 := 000, 0.001 .. 400$

```
G(n1) := | g1 ← 1  if  n1 ≤ 1
         | otherwise
         |   | g1 ← 1
         |   | for  k1 ∈ n1
         |   |   | Rng ← k1/100
         |   |   | for  j1 ∈ n1
         |   |   |   | x ← j1/400
         |   |   |   | for  ittr ∈ 0 .. n1
         |   |   |   |   | xnew ← Rng·x·(1 − x)
         |   |   |   |   | x ← xnew
         |   |   |   |   | Z ← x
         | Z
```

Notice that the nested loop below "otherwise" in the program at the left gets made by adding lines from the "otherwise" placeholder. To have "otherwise" next to main vertical line, insert it and then add line from the square dot placeholder. Follow the same procedure for the "for" statements.



Logistic Difference Equation (LDE)

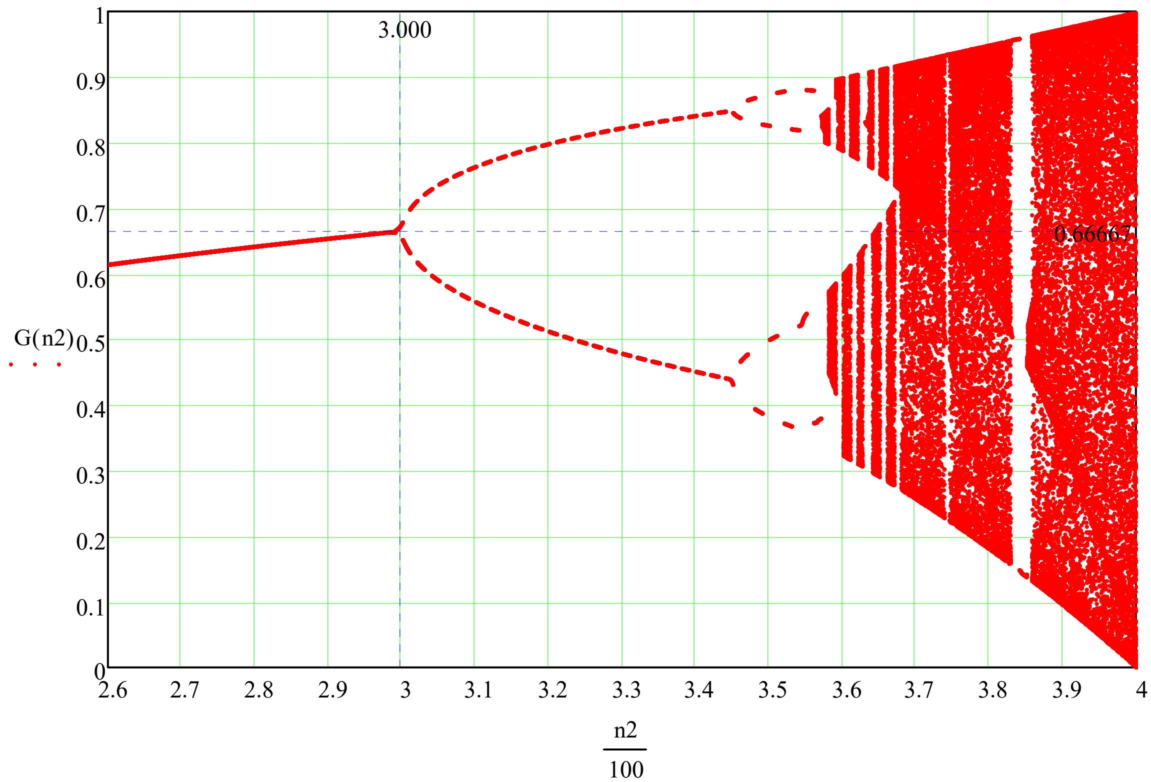
Let: $n2 := 260, 260.001 .. 400$

```
G(n2) := | g1 ← 1  if  n2 ≤ 1
         | otherwise
         |   | g1 ← 1
         |   | for  k1 ∈ n2
         |   |   | Rng ← k1/100
         |   |   | for  j1 ∈ n2
         |   |   |   | x ← j1/400
         |   |   |   | for  ittr ∈ 0 .. n2
         |   |   |   |   | xnew ← Rng·x·(1 − x)
         |   |   |   |   | x ← xnew
         |   |   |   |   | Z ← x
         | Z
```

The chaos that is demonstrated by the program at the left is real. That begs the question, "is what we consider as continuous real?" Reality may be fragmented and what we observe to be steady and continuous may actually be synchronized fragments that are like the timing light that can freeze motion so that it appears to be not moving. Then even our brains and memories are refreshed like a computer memory so that during times when there is no refresh, we are not aware that other realities are being multi-tasked and then we can indeed consider our reality only an illusion of being steady.

The variable "ittr" is a dummy variable that serves to synchronize the timing of the loop that iterates the variable x in the logistic difference equation. The Rng and x variables are also synchronized to the range variable n2 in the above program. The total Rng value could be from 0 to 4 but is set for 2.6 to 4 so as to magnify the actual area of chaos. Stepping by 0.001 in the range n2 allows for finer definition of the plot. Notice that in the below plot, the first bifurcation starts at 3 on the x axis and at 0.666... on the y axis. Their product is 2 and this is fundamental to period doubling that occurs in the chaos plots as chaos increases from left to right on the plot. The next set of bifurcations yields 2 when the product of the upper bifurcation is divided by the product of the lower bifurcation. It also relates to the Mandelbrot chaos plot since an amplitude of greater than 2 (absolute numerically) in the iteration calculation signals that the amplitude is headed for infinity. This strongly suggests that reality itself is based on computer-like binary refresh cycles that begin to be indeterminate when pushed past a certain point while being iterated. Iteration is key to this analysis and even suggests a form of entropy if not entropy itself. My view of reality is that it is like the refreshed image on a movie theater screen and that there is almost an infinite amount of other realities sandwiched time-wise between our own refresh rate. Further, it actually means that our universe is indeed a huge holographic generating computer in a quantum sense. Then the plot below allows for a peek at the actual limits of the refresh process in our universe.

Logistic Difference Equation Leads To Bifurcation And Then Chaos



Range = Rng

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Suggested References:

Gleick, James, "**CHAOS**", Penguin Books, 354 pages total, Copyright by James Gleick, 1987

Bayles, Jerry E., URL: **http://www.electrogravity.com**, Source for free e-book, "*Electrogravitation As A Unified Field Theory*."

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