

The homeworks will be graded statistically.

1. Solve the following difference equations:

a) $y_{n+2} = -2y_{n+1} + 3y_n$, $y_0 = 0, y_1 = 1$.

b) $y_{n+2} = 4y_{n+1} - 4y_n$, $y_0 = 0, y_1 = 1$.

c) $y_{n+2} = y_{n+1} - y_n$, $y_0 = 0, y_1 = 1$.

All the problems below are from the textbook: *Nonlinear Dynamics and Chaos*, by Steven H. Strogatz, Perseus Books Group, 2001.

2. 10.1.12. We know that a fixed point x of a map is stable if $|f'(x)| < 1$. The point is called superstable if $f'(x) = 0$. By drawing the cobweb diagram you see that at such a point the converge is faster than is usually the case.
3. 10.1.13.
4. 10.3.6.
5. 10.3.7.