

PROBLEM:

Define a discrete-time signal via the formula:

$$y[n] = (0.99)^n \cos(2\pi(0.123)n + \phi)$$

- Make a sketch of $y[n]$ versus n , as a “comb” plot. Take the range of n to be $0 \leq n \leq 20$.
- Design a feedback filter that will synthesize $y[n]$. Give your answer in the form of a difference equation with numerical values for the coefficients. Assume that the synthesis will be accomplished by using an impulse input to “start” the difference equation (which has zero initial conditions).