PROBLEM:

Define a discrete-time signal via the formula:

$$y[n] = 7(0.9)^n \cos(2\pi(0.2)n + \phi)$$

(a) Make a sketch of $y[n]$ versus n, as a "comb" plot. Take the range of n to be $0 \le n \le 10$.

(b) Design a (second-order) 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 is at rest, i.e., has zero initial conditions).