EE3210 Signals and Systems

Tutorial 2

Problem 1: Determine if each of the following two signals is periodic. If the signal is periodic, determine its fundamental period.

(a) $x(t) = [\cos(2t - \frac{\pi}{3})]^2$

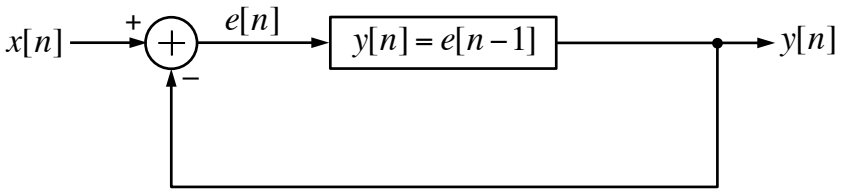
(b) $x[n] = \cos(\frac{\pi}{2}n)\cos(\frac{\pi}{4}n)$

Problem 2: Determine if each of the following two systems is memoryless and/or invertible. Justify your answers.

(a) $y(t) = x(2t)$

(b) $y[n] = x[2n]$

Problem 3: Consider the feedback system shown in the figure below.



Assume that $y[n] = 0$ for $n < 0$. Sketch the output when $x[n] = \delta[n]$.