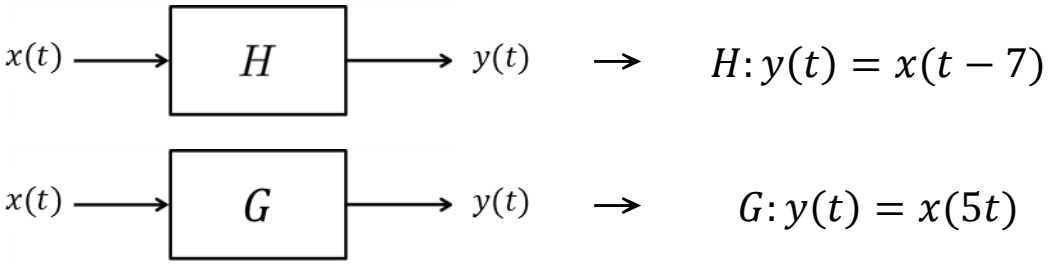
Signals and Systems HW1
Deadline: 2019/3/08 before 18:30
(You should submit hand-writing paper to BL B1 EE student office.)

1. Determine the signals as periodic or aperiodic. If periodic, identify the fundamental period. You have to justify your answer.

   (a) $x(t)=\sin(\frac{\pi}{2}t)+\cos(\frac{5\pi}{8}t)$ (25%)

   (b) $x[n]=\cos(\pi n)+\cos(2\pi\sqrt{5}n)$ (25%)

2. Consider the following systems:



   (a) Determine the output $y(t)$ if inputting $x(t)$ into the system H^{-1}, which is the inverse of H. (10%)
   (b) Determine the output $y(t)$ if inputting $x(t)$ into the system G^{-1}, which is the inverse of G. (10%)
   (c) Consider the system in the following figure. Moreover, F is equivalent to the cascaded interconnection of H and G. Find the output $w(t)$ if inputting $x(t)$ into the system F^{-1}, which is the inverse of F and draw it in block diagram form in terms of H^{-1} ,G^{-1} between $x(t)$ and $w(t)$. Justify your answer. (30%)