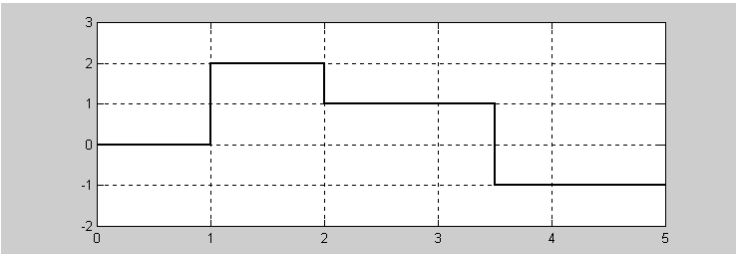
Signals and Systems 7 November 2012
Fall 2012 Quiz: Wednesday 14 November 2012

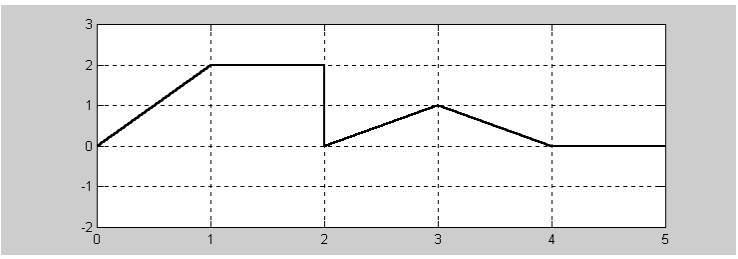
Homework Assignment #12

1. Write an expression for the following functions using shifted and scaled versions of the unit step function $u_s(t)$.

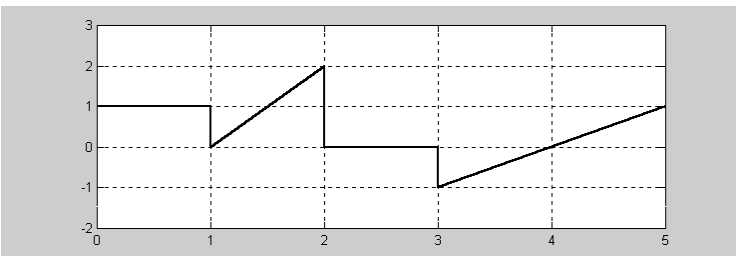
(a)



(b)



(c)



2. (a) Find a vector orthogonal to both $\begin{pmatrix}1\\2\\3\end{pmatrix}$ and $\begin{pmatrix}3\\2\\1\end{pmatrix}$.

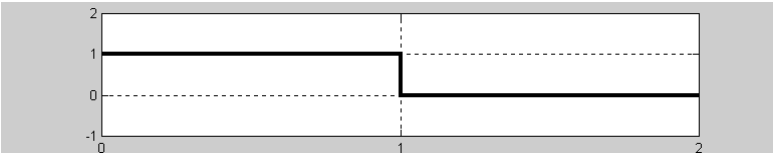
(b) Find two independent vectors orthogonal to $\begin{pmatrix}2\\1\\3\end{pmatrix}$.

(c) For the vector $x = \begin{pmatrix}2\\0\\1\end{pmatrix}$, find a nonzero vector y such that $\langle x,y\rangle = |x|\cdot|y|$.

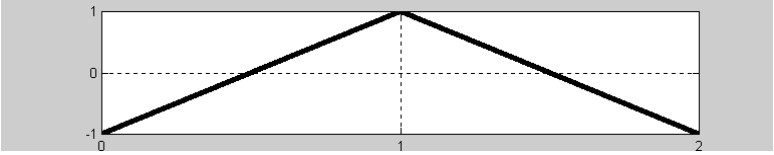
(See Problem 3 on reverse.)

3. For each of the given functions, sketch two other functions that are orthogonal to the given function and orthogonal to each other on the interval [0,2].

(a)



(b)



(c)