ECE 113 HW 1
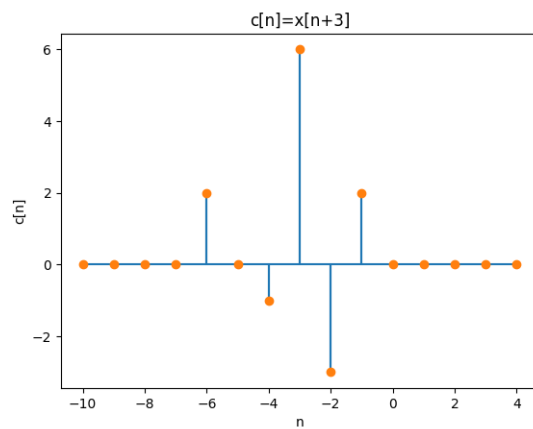
Lawrence Liu
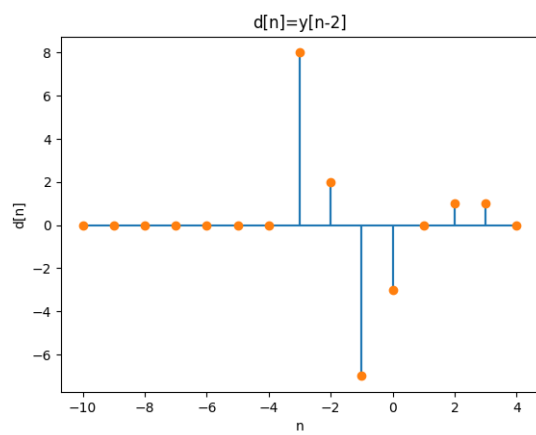
October 4, 2022

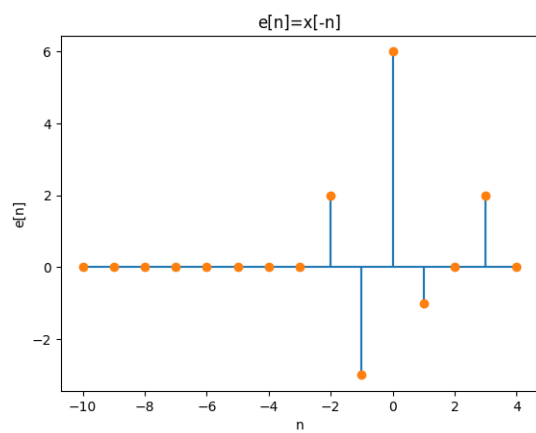## Problem 1
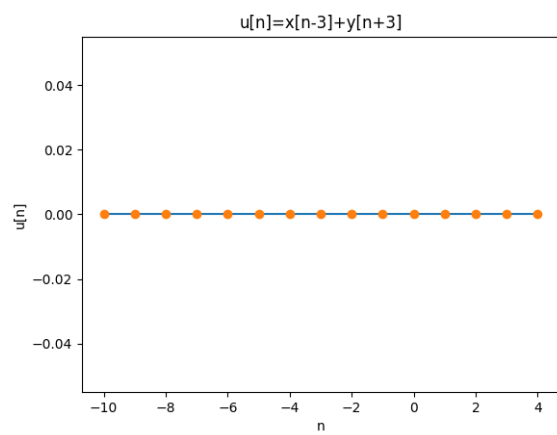
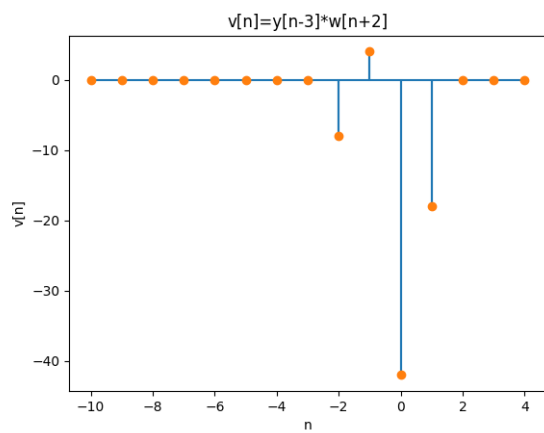### (a)

c[n]=x[n+3]

(b)

d[n]=y[n-2]

(c)

e[n]=x[-n]

(d)

(e)

3

(f)

s[n]=y[n+4]-w[n-3]

(g)

r[n]=3.9w[n]

4
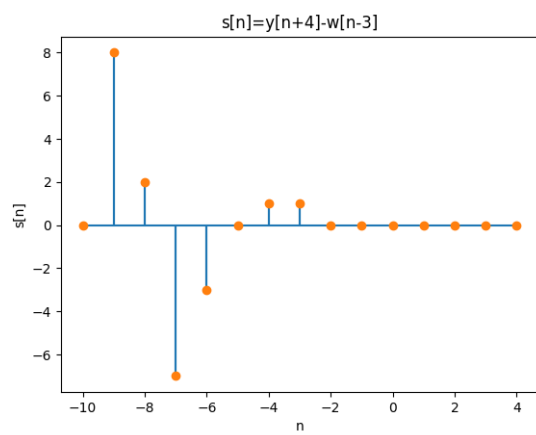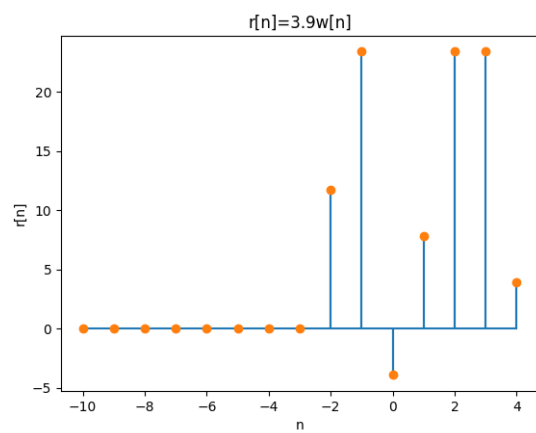
Problem 2

(a)

$\boxed{20}$

(b)

$\boxed{25}$

(c)

$\boxed{40}$

(d)

$\boxed{80}$

(e)

$\boxed{20}$

(f)

$\boxed{8}$

Problem 3

(a)

Since $e^{j\theta} = \cos(\theta) + j\sin(\theta)$, we have that the fundamental period of $\hat{x}_a[n]$ is
$\boxed{8}$

(b)

We have that $F_0 = 0.3$, therefore we have that the period of the sequence is
$\frac{k}{0.3}$. The minimum k such that this evaluates to a positive integer is $k = 3$.
Therefore, the fundamental period of the sequence is $\boxed{10}$.