LAB – 2 * $x_6 = A \times \cos(2 \times \pi \times f \times t + \theta)$

Fundamental Period:

Fig1 : N = ∞

Fig2 : N = 16

Fig3 : N = 8

Fig4 : N = 4

Fig5 : N = 2

Cycles:

Fig1 : 0

Fig2 = 1.5

Fig3 : 3.5

Fig4 : 6.5

Fig5 : 12.5

$\omega = 2\pi t$

$f = \frac{k}{N}$

Frequency:

Fig1 : 0

Fig2 : $\frac{1}{16}$

Fig3 : $\frac{1}{8}$

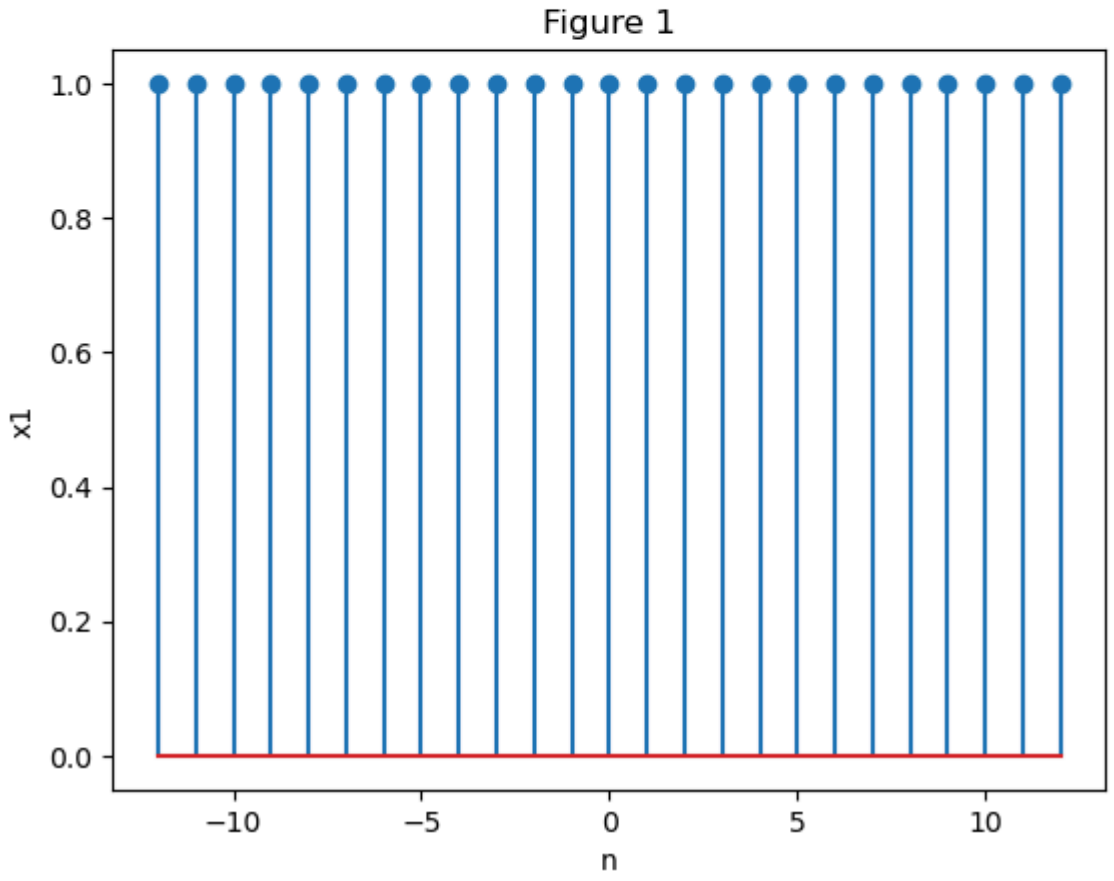
Fig4 : $\frac{1}{4}$

Fig5 : $\frac{1}{2}$

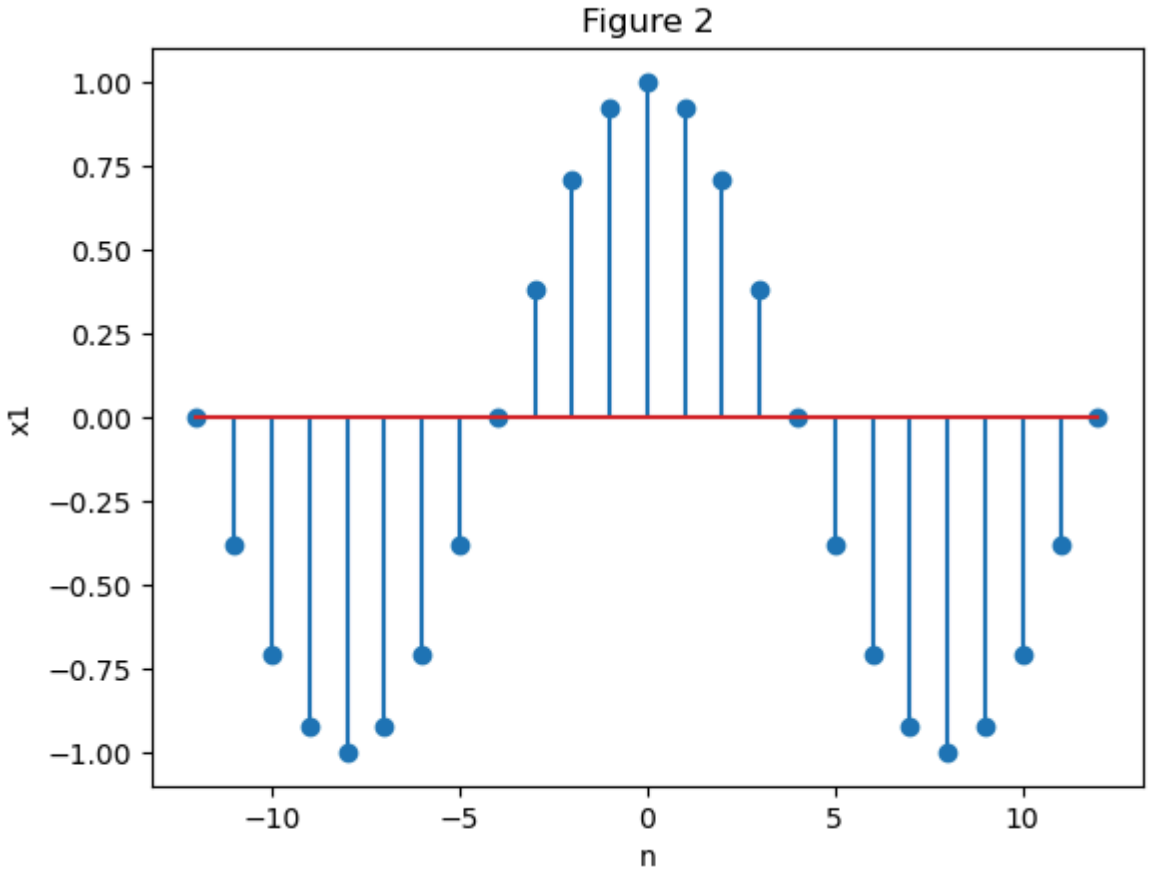
```
import numpy as np
import matplotlib.pyplot as plt
```

```
t = np.arange(-12, 13)
n = t
x = 2 * np.pi
```

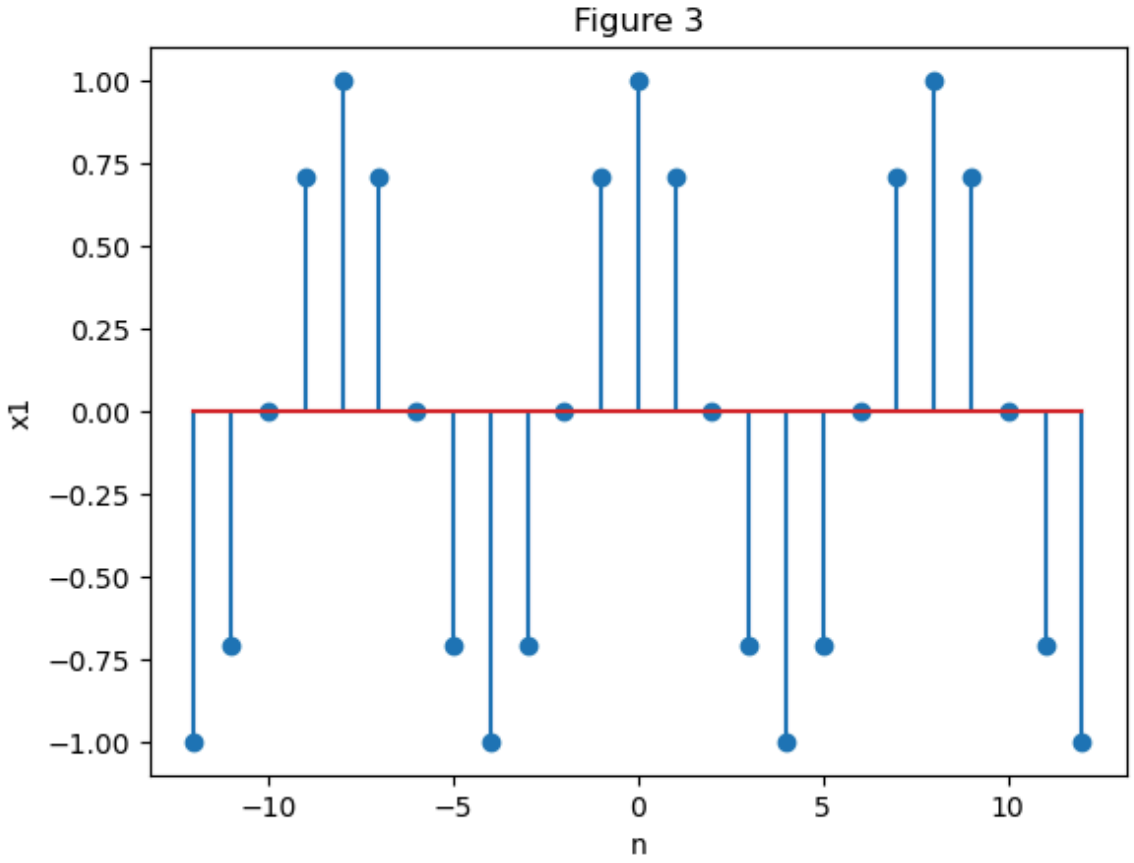
```
plt.figure()
f1 = 0
x1 = np.cos(x * f1 * n)
plt.stem(n, x1)
plt.xlabel('n')
plt.ylabel('x1')
plt.title('Figure 1')
plt.show()
```



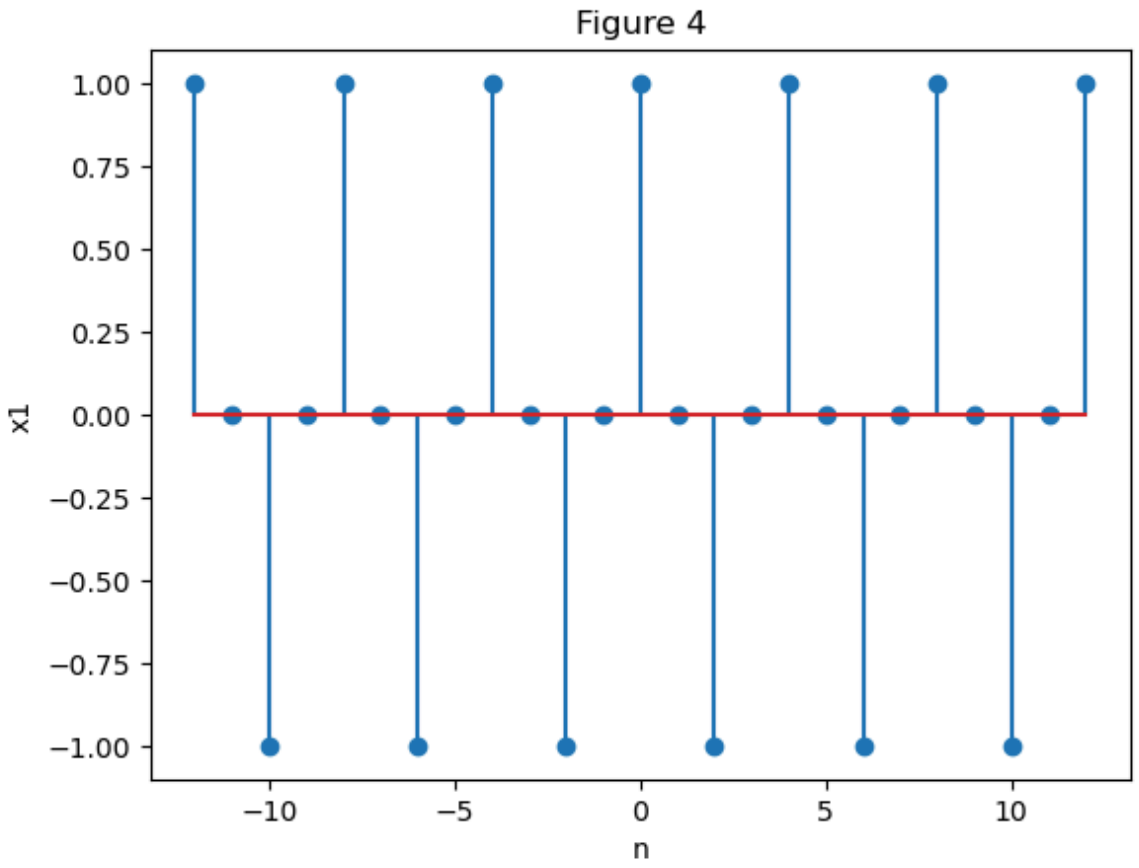
```
plt.figure()
f1 = 1/16
x1 = np.cos(x * f1 * n)
plt.stem(n, x1)
plt.xlabel('n')
plt.ylabel('x1')
plt.title('Figure 2')
plt.show()
```



```
plt.figure()
f1 = 1/8
x1 = np.cos(x * f1 * n)
plt.stem(n, x1)
plt.xlabel('n')
plt.ylabel('x1')
plt.title('Figure 3')
plt.show()
```



```
plt.figure()
f1 = 1/4
x1 = np.cos(x * f1 * n)
plt.stem(n, x1)
plt.xlabel('n')
plt.ylabel('x1')
plt.title('Figure 4')
plt.show()
```



```
plt.figure()
f1 = 1/2
x1 = np.cos(x * f1 * n)
plt.stem(n, x1)
plt.xlabel('n')
plt.ylabel('x1')
plt.title('Figure 5')
plt.show()
```