

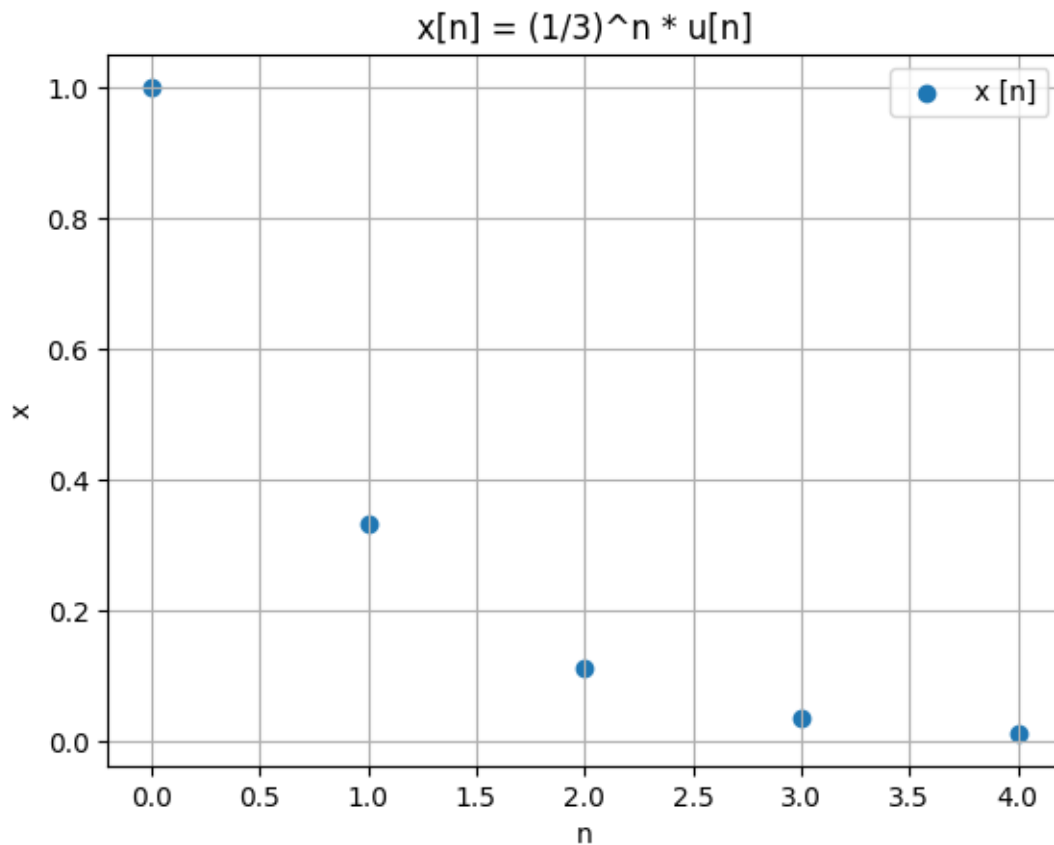
Homework1

September 8, 2025

```
[2]: import numpy as np
import scipy as sp
import matplotlib.pyplot as plt
```

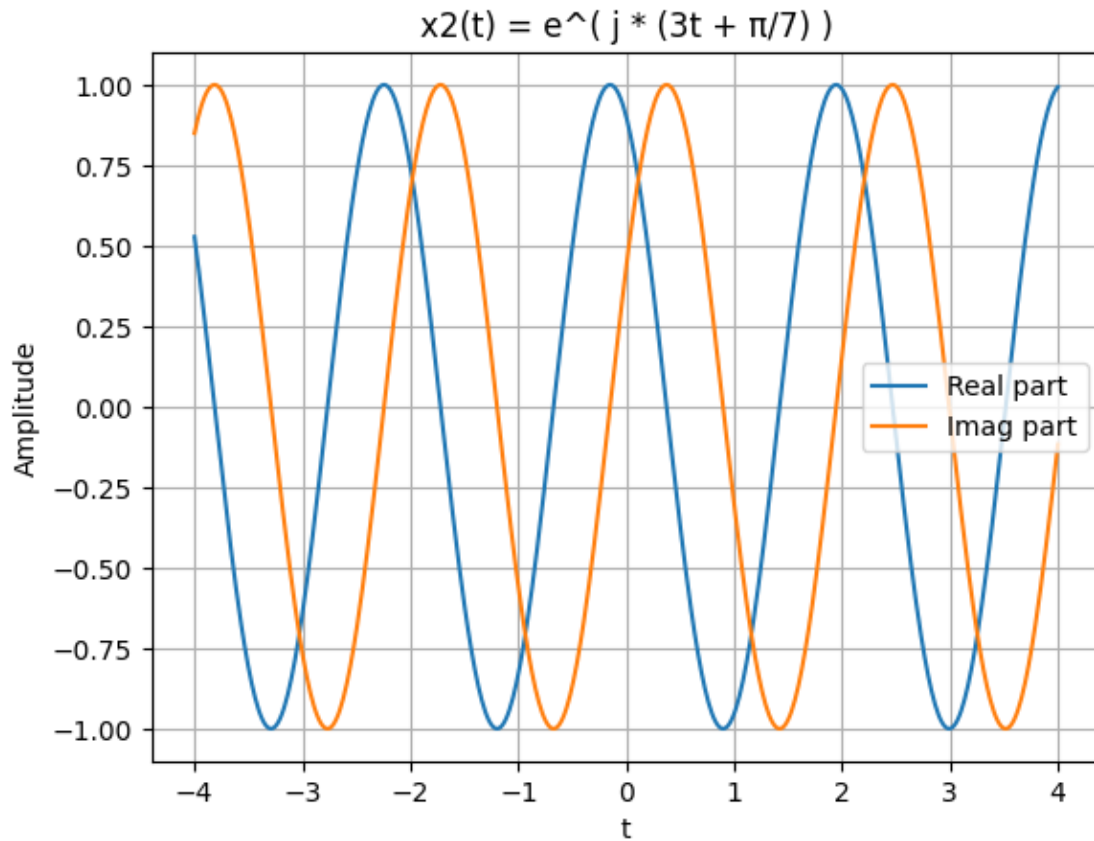
```
[4]: # Problem 3 Signal A
n = np.arange(0, 5)
x = (1/3)**n

plt.scatter(n, x, label = "x [n]")
plt.xlabel("n")
plt.ylabel("x")
plt.title("x[n] = (1/3)^n * u[n]")
plt.legend()
plt.grid(True)
plt.show()
```



```
[5]: # Problem 3 Signal B
t = np.linspace(-4,4, 500)
x2_real = np.cos(3*t + np.pi/7)
x2_imag = np.sin(3*t + np.pi/7)

plt.plot(t, x2_real, label="Real part")
plt.plot(t, x2_imag, label="Imag part")
plt.title("x2(t) = e^( j * (3t + /7) )")
plt.xlabel("t")
plt.ylabel("Amplitude")
plt.legend()
plt.grid(True)
plt.show()
```



```
[7]: # Problem 3 Signal C
n = np.arange(-10, 10)
x3_real = np.cos(np.pi*n/3 + np.pi/7)
x3_imag = np.sin(np.pi*n/3 + np.pi/7)

plt.scatter(n, x3_real, label = "Real part")
plt.scatter(n, x3_imag, label = "Imag part")
plt.xlabel("n")
plt.ylabel("Amplitude")
plt.title("x[n] = e^( j * (n*pi/3 + pi/10) )")
plt.legend()
plt.grid(True)
plt.show()
```

