Philip Nevins

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ECE315 Signals & Systems  
  
**Problem #2a**  
  
**Given:**  
(a) Write a MATLAB or python script that recreates the plot of the periodic signal *x*(*t*) shown in Figure 1 with fundamental period *T*0 = 2, maximum amplitude *H* = 2, and minimum amplitude *h* = 1 between *t* = −6 and *t* = 6. Make the fundamental period *T*0 and the amplitudes *H* and *h* variables in your script. Include your code and an image showing the graphical output in your homework solutions. (12 pts.)

(Hint: The 2D plotting functions in MATLAB and in the python library matplotlib draw line segments connecting successive points. So, you really just need to plot the important points in the correct order.)

**Find:** Plot and python script

**Solution:**

Chart, line chart

Description automatically generated

# -\*- coding: utf-8 -\*-

"""

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"""

import numpy as np

import matplotlib.pyplot as plt

#Amplitude and Fundamental Period

H = 2 #Max Amp

h = 1 #Min Amp

T0 = 2 #Fundamental Period

#Axis Parameters

tmin = -6

tmax = 6

t = np.arange(tmin, tmax + 1)

#Setup Plot

plt.style.use('seaborn-whitegrid')

fig, ax = plt.subplots(1, figsize=(15, 5))

#Plot Points

for i in range(tmin, tmax, T0):

p0 = i

p1 = i + T0 / 2

p2 = i + T0

plt.scatter([p0, p1, p2], [h, h, H], ec='b', fc='b')

plt.scatter([p0, p2], [H, H], ec='b', fc='none')

plt.plot([p0, p1, p2], [h, h, H], color='b', ls='-') #Solid Line

plt.plot([p2, p2], [h, H], color='b', ls='--') #Dashed Line

#Plot Settings

plt.xlabel("Time $t$", fontsize='large')

plt.ylabel("Signal Function $x(t)$", fontsize='large')

plt.title("Signal $x(t)$ v Time $t$", fontsize='large')