

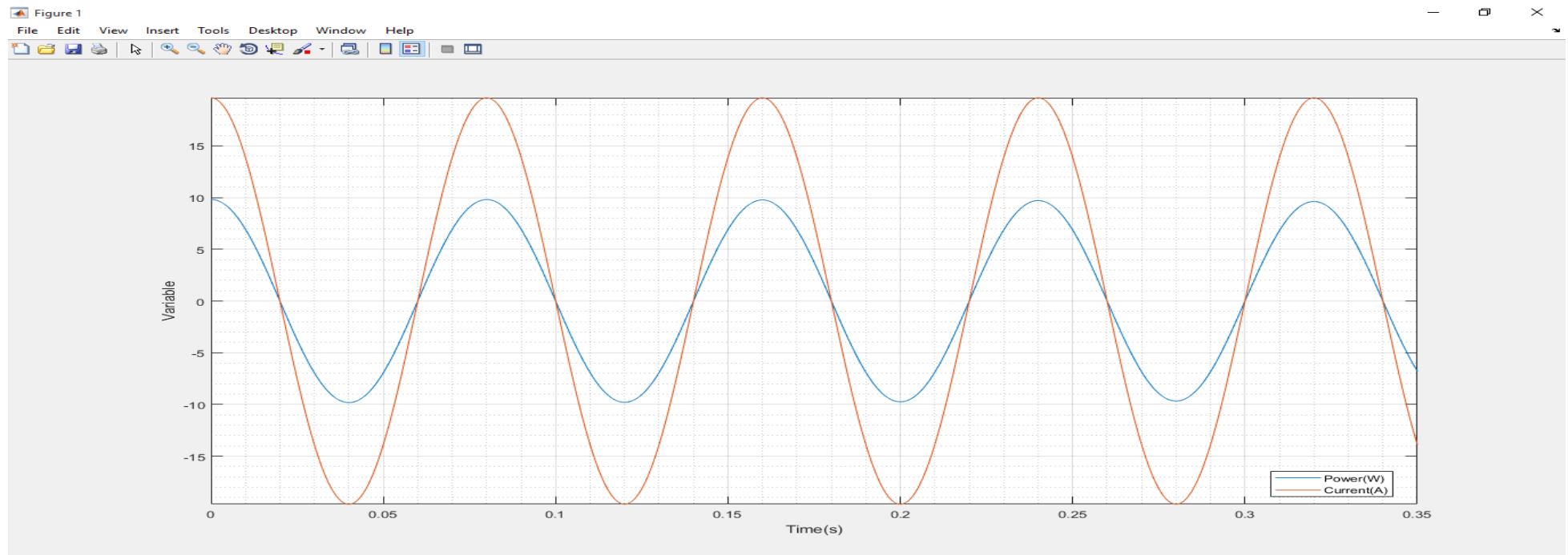
QUESTION

The charge $\{Q(t)\}$ in Coulombs and Voltage $\{V(t)\}$ in volts for an electrical system are given by the Equations (1) and (2) respectively.

$$Q(t) = 0.25\sin(25\pi t) \quad (1)$$

$$V(t) = 0.5\cos(0.2\pi t) \quad (2)$$

With the aid of MATLAB mfile, obtain the plots (dynamic responses) of the current (I) in Ampere and the power (P) in watts of the system for time t initial = 0 second and t final = 0.35 second with a step size of 0.0001 second on the same graph. The labels of the y-and x-axes of the graph should be Variable and Time(s) respectively, and the graph should have both major and minor grid lines. Also, the legends of the plots should be Current(A) and Power(W) . The colours of the line of the current and the power should be red and blue, respectively.

ANSWER

The screenshot displays the MATLAB R2017a environment. The main window is the Editor, showing a script named 'Isaiahinaibo.m'. The script contains the following code:

```

1 -  commandwindow
2 -  clear
3 -  clc
4 -  close all
5 -  syms t
6 -  tn = (0:0.0001:0.35)
7 -  a = vpa(pi)
8 -  Q(t) = 0.25*sin(25*a*t)
9 -  V(t) = 0.5*cos(0.2*a*t)
10 -  I(t) = diff(Q(t))
11 -  In = subs(I(t), tn)
12 -  P(t) = I(t) * V(t)
13 -  Pn = subs(P(t), tn)
14 -  figure(1)
15 -  plot(tn, Pn, tn, In)
16 -  xlabel('Time (s)')
17 -  ylabel('Variable')
18 -  legend('Power (W)', 'Current (A)', 'Location', 'Best')
19 -  grid on
20 -  grid minor
21 -  axis tight
22 -

```

The Command Window at the bottom shows a message: "New to MATLAB? See resources for [Getting Started](#)." Below this, the command prompt shows the start of the script execution: `fx tn =`.

The Workspace window on the left lists the following variables and their types:

Name	Value
a	1x1 sym
I	1x1 symfun
In	1x3501 sym
P	1x1 symfun
Pn	1x3501 sym
Q	1x1 symfun
t	1x1 sym
tn	1x3501 double
V	1x1 symfun