Homework #3

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Subject - ASTR-119

Assignment - Homework 3

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Purpose - The purpose of this assignment is to create a jupyter notebook and get familiar with numpy and matplotlib library in python.

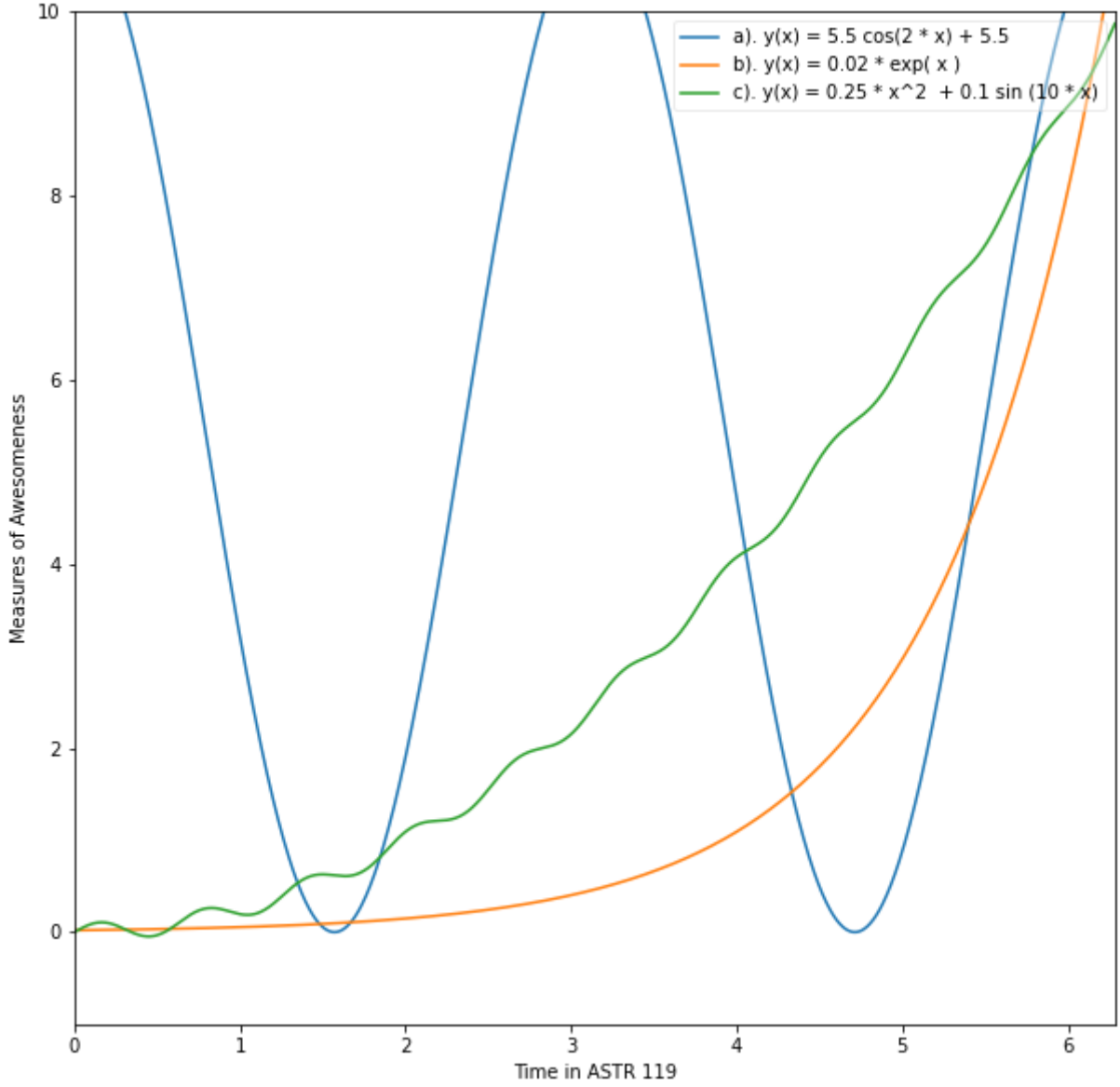
In [4]:
```
%matplotlib inline
import numpy as np # imports the numpy library
import matplotlib.pyplot as plt  #imports matplotlib
```

In [5]:
```
#using numpy to create an array x running x = [0, 2 * pi]
#inclusive with 1000 values
'''
#making an array using arange
n = 1000
x = np.arange(n, dtype = float) #make an array
x *= 2.0*np.pi/float(n-1) #x = [0,2*pi]
'''
# 1
# in a single line we can make an array using linspace

x = np.linspace(0, 2*np.pi, 1000)
print("Print first element of x = ", x[0]) # first element is 0
print("Print last element of x = ", x[-1]) # value of 2pi = 6.283185307179
586
```

```
Print first element of x =  0.0
Print last element of x =  6.283185307179586
```

In [6]:

```
fig = plt.figure(figsize=[10,10]) # sets the figure size to 10 x 10

plt.xlim([0,2*np.pi]) # sets the x range to [0, 2*pi]
plt.ylim([-1,10])  # sets the y range to [-1, 10]


# plotting the given values
# y1 as a). y(x) = 5.5 cos(2 * x) + 5.5

# y2 as b). y(x) = 0.02 * exp( x )

# y3 as c). y(x) = 0.25 * x^2  + 0.1 sin (10 * x)

y1 = 5.5* np.cos(2 * x) + 5.5
y2 = 0.02 * np.exp( x )
y3 = 0.25 * x**2  + 0.1* np.sin (10 * x)

plt.plot(x, y1, label ='a). y(x) = 5.5 cos(2 * x) + 5.5')
plt.plot(x, y2, label ='b). y(x) = 0.02 * exp( x )')
plt.plot(x, y3, label ='c). y(x) = 0.25 * x^2  + 0.1 sin (10 * x)')

# 2
#plotting the x and y range

plt.xlabel('Time in ASTR 119') # labels the x axis
plt.ylabel('Measures of Awesomeness') # labels the y axia
plt.legend(loc = 1, framealpha = 0.4) #semi transparent

plt.show()

#plt.savefig('plot.png')
```


a). y(x) = 5.5 cos(2 * x) + 5.5
b). y(x) = 0.02 * exp(x)
c). y(x) = 0.25 * x^2 + 0.1 sin (10 * x)
Measures of Awesomeness
Time in ASTR 119
0
2
4
6
8
10
0
1
2
3
4
5
6

In [ ]: