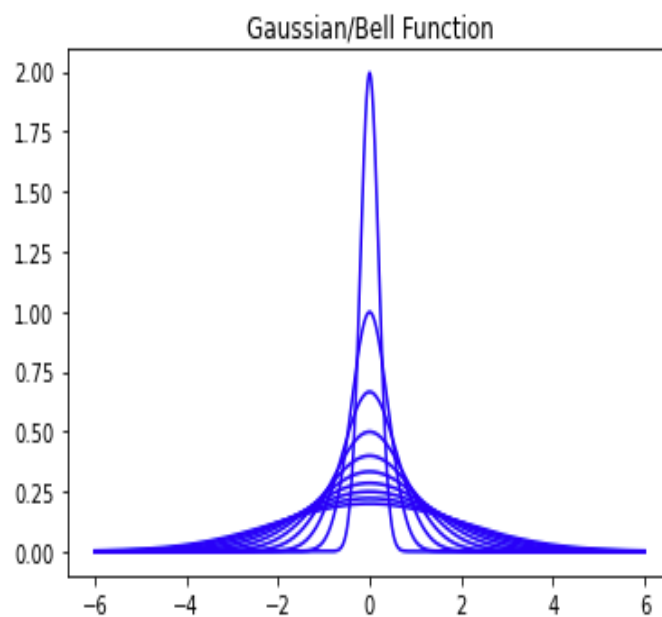


## PROGRAM 5.6.1:

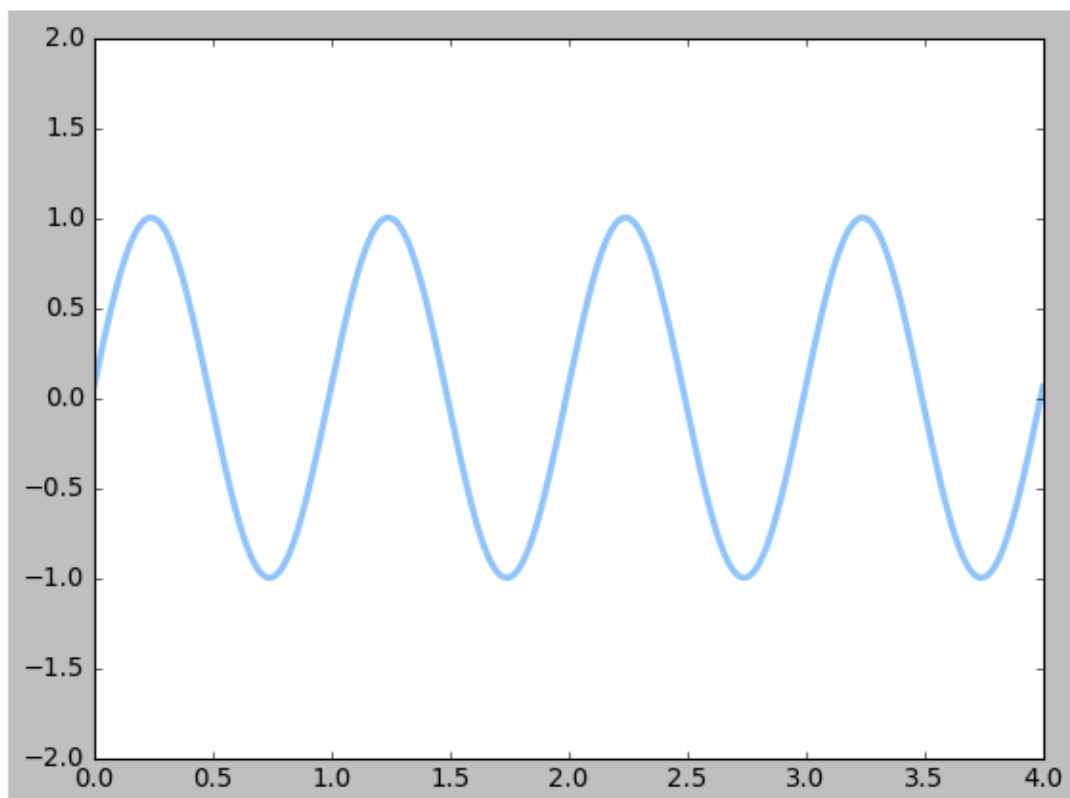
```
#AMIT CHAUHAN
#RA2311004010332 ECEF/F
from numpy import*
import matplotlib.pyplot as plt
from matplotlib.animation import FuncAnimation
def f(x,m,s):
    return (1.0/(sqrt(2*pi)*s))*exp(-0.5*((x-m)/s)**2)
m=0;s_start=2;s_stop=0.2
s_values =linspace(s_start,s_stop,10)
x=linspace(m-3*s_start,m+3*s_start,1000)
max_f=f(m,m,s_stop)
import time
fig =plt.figure()
frame_counter=0
for s in s_values:
    y=f(x,m,s)
    plt.plot(x,y,'b-')
    plt.savefig('tmp_%04d.png'%frame_counter)
    frame_counter +=1
plt.title("Gaussian/Bell Function")
```

Out[4]: Text(0.5, 1.0, 'Gaussian/Bell Function')



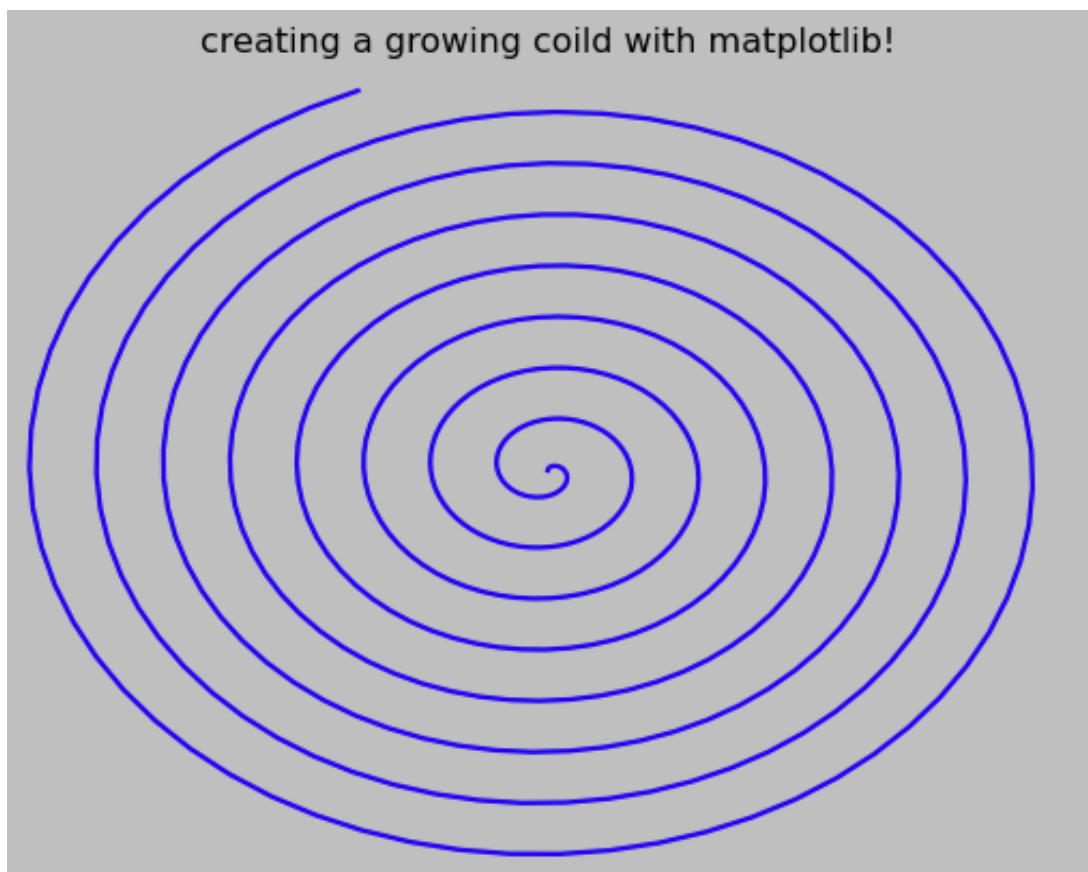
## PROGRAM 5.6.2:

```
#AMIT CHAUHAN
#RA2311004010332 ECEF/F
import numpy as np
import matplotlib
from matplotlib import pyplot as plt
from matplotlib.animation import FuncAnimation
plt.style.use('seaborn-pastel')
fig=plt.figure()
ax=plt.axes(xlim=(0,4),ylim=(-2,2))
line,=ax.plot([],[],lw=3)
def init():
    line.set_data([],[])
    return line,
def animate(i):
    x=np.linspace(0,4,1000)
    y=np.sin(2*np.pi*(x-0.01*i))
    line.set_data(x,y)
    return line,
anim=FuncAnimation(fig,animate,init_func=init,frames=200,interval=20,blit=True)
writergif=matplotlib.animation.PillowWriter(fps=30)
anim.save('sin_wave.gif',writer=writergif)
```



## PROGRAM 5.6.3:

```
#AMIT CHAUHAN
#RA2311004010332 ECEF/F
import matplotlib
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np
plt.style.use('classic')
fig=plt.figure()
ax=plt.axes(xlim=(-50,50),ylim=(-50,50))
line,=ax.plot([],[],lw=2)
def init():
    line.set_data([],[])
    return line,
xdata,ydata= [],[]
def animate(i):
    t=0.1*i
    x=t*np.sin(t)
    y=t*np.cos(t)
    xdata.append(x)
    ydata.append(y)
    line.set_data(xdata,ydata)
    return line,
plt.title('creating a growing coild with matplotlib!')
plt.axis('off')
anim= animation.FuncAnimation(fig,animate,init_func=init,frames=500,interval=20,blit=True)
writetgif=matplotlib.animation.PillowWriter(fps=30)
anim.save('growthcoil2.gif',writer=writetgif)
```

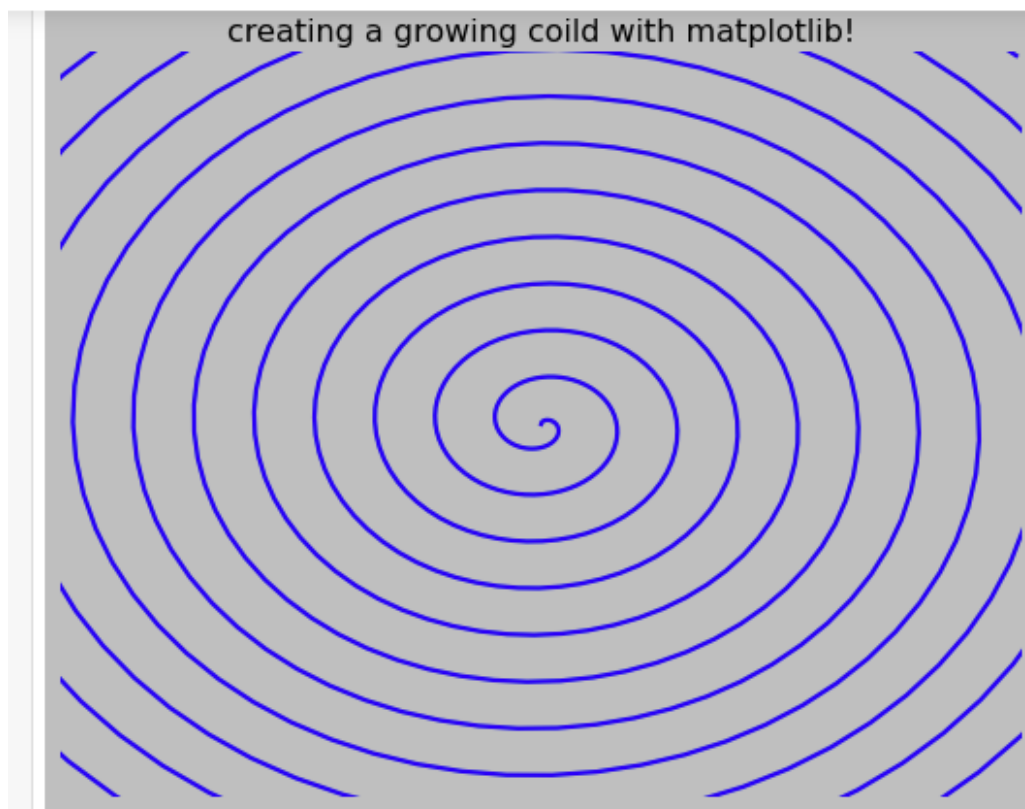


## POSTLAB QUESTION :

### Q.1

```
#AMIT CHAUHAN
#RA2311004010332 ECEF/F
#POSTLAB Q.1

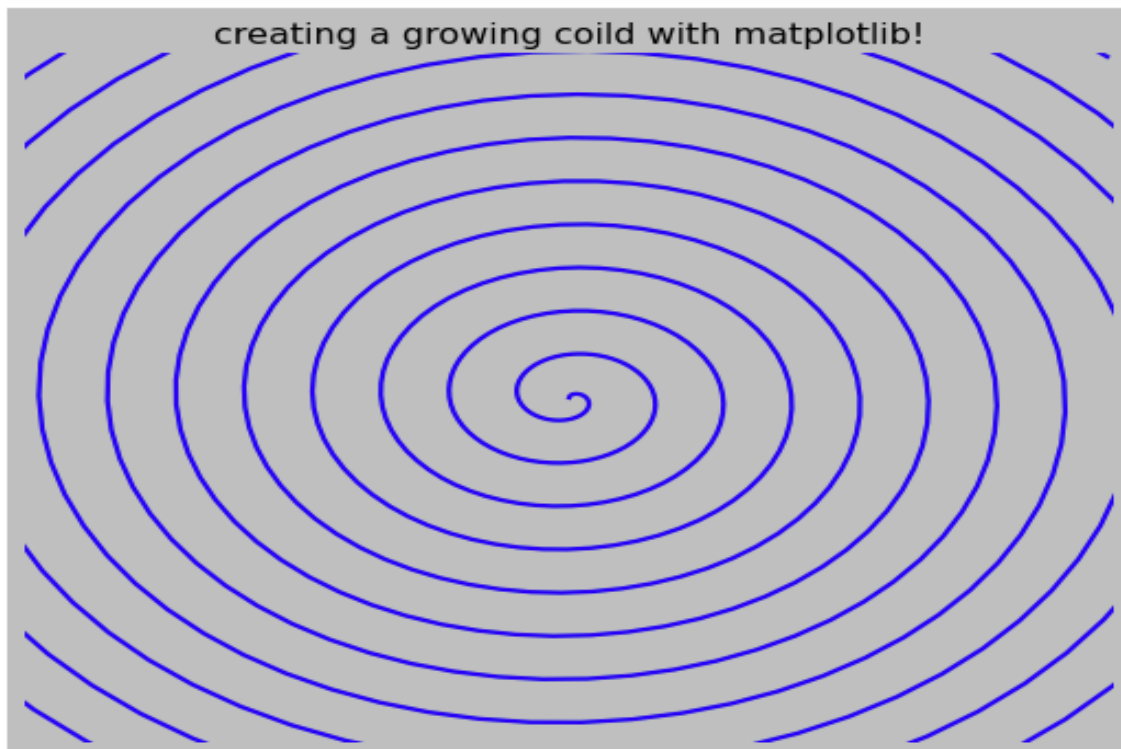
import matplotlib
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np
plt.style.use('classic')
fig=plt.figure()
ax=plt.axes(xlim=(-50,50),ylim=(-50,50))
line,=ax.plot([],[],lw=2)
def init():
    line.set_data([],[])
    return line,
xdata,ydata= [],[]
def animate(i):
    t=0.1*i
    x=t*np.sin(t)
    y=t*np.cos(t)
    xdata.append(x)
    ydata.append(y)
    line.set_data(xdata,ydata)
    return line,
plt.title('creating a growing coild with matplotlib!')
plt.axis('off')
anim= animation.FuncAnimation(fig,animate,init_func=init,frames=700,interval=10,blit=True)
writgif=matplotlib.animation.PillowWriter(fps=30)
anim.save('growthcoil2.gif',writer=writgif)
```



```

#AMIT CHAUHAN
#RA2311004010332 ECEF/F
#POSTLAB Q.1
import matplotlib
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np
plt.style.use('classic')
fig=plt.figure()
ax=plt.axes(xlim=(-50,50),ylim=(-50,50))
line,=ax.plot([],[],lw=2)
def init():
    line.set_data([],[])
    return line,
xdata,ydata= [],[]
def animate(i):
    t=0.1*i
    x=t*np.sin(t)
    y=t*np.cos(t)
    xdata.append(x)
    ydata.append(y)
    line.set_data(xdata,ydata)
    return line,
plt.title('creating a growing coild with matplotlib!')
plt.axis('off')
anim= animation.FuncAnimation(fig,animate,init_func=init,frames=700,interval=5,blit=True)
writегif=matplotlib.animation.PillowWriter(fps=30)
anim.save('growthcoil2.gif',writer=writегif)

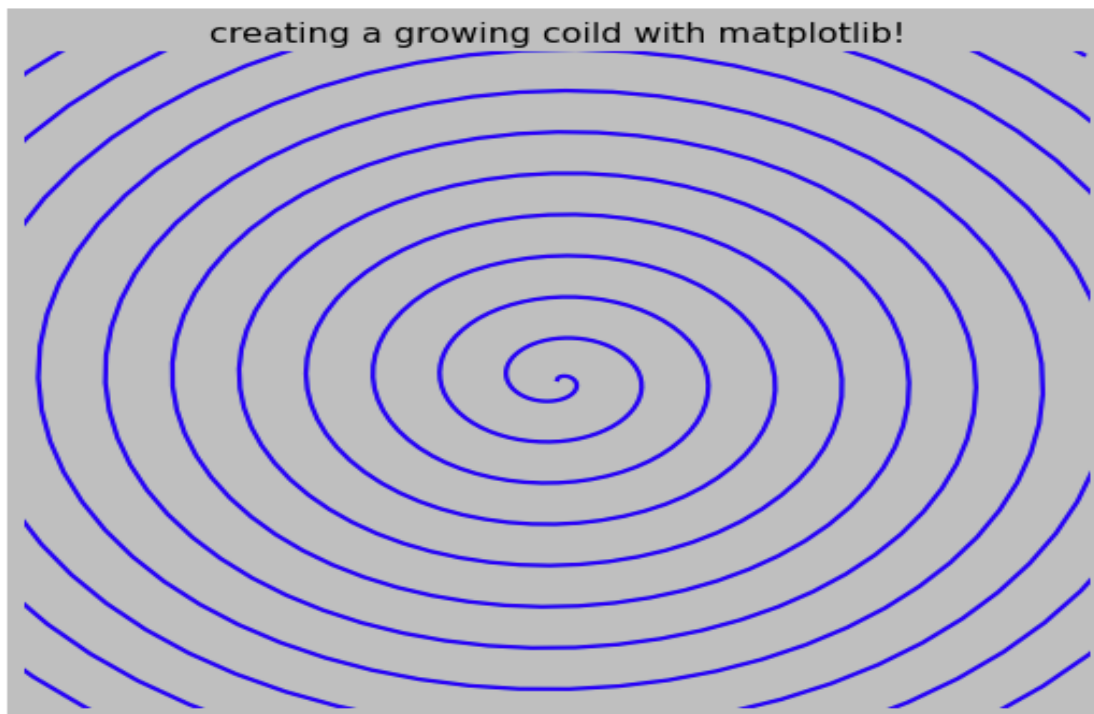
```



```

#AMIT CHAUHAN
#RA2311004010332 ECEF/F
#POSTLAB Q.1
import matplotlib
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np
plt.style.use('classic')
fig=plt.figure()
ax=plt.axes(xlim=(-50,50),ylim=(-50,50))
line,=ax.plot([],[],lw=2)
def init():
    line.set_data([],[])
    return line,
xdata,ydata= [],[]
def animate(i):
    t=0.1*i
    x=t*np.sin(t)
    y=t*np.cos(t)
    xdata.append(x)
    ydata.append(y)
    line.set_data(xdata,ydata)
    return line,
plt.title('creating a growing coild with matplotlib!')
plt.axis('off')
anim= animation.FuncAnimation(fig,animate,init_func=init,frames=700,interval=40,blit=True)
writer=matplotlib.animation.PillowWriter(fps=30)
anim.save('growthcoil2.gif',writer=writer)

```



## Q.2

Consider: Frame Number =700, animation interval = 10

```
#AMIT CHAUHAN
#RA2311004010332 ECEF/F
#POSTLAB Q.1

import matplotlib
import matplotlib.pyplot as plt
import matplotlib.animation as animation
import numpy as np
plt.style.use('classic')
fig=plt.figure()
ax=plt.axes(xlim=(-50,50),ylim=(-50,50))
line,=ax.plot([],[],lw=2)
def init():
    line.set_data([],[])
    return line,
xdata,ydata= [],[]
def animate(i):
    t=0.1*i
    x=t*np.sin(t)
    y=t*np.cos(t)
    xdata.append(x)
    ydata.append(y)
    line.set_data(xdata,ydata)
    return line,
plt.title('creating a growing coild with matplotlib!')
plt.axis('off')
anim= animation.FuncAnimation(fig,animate,init_func=init,frames=700,interval=10,blit=True)
writgif=matplotlib.animation.PillowWriter(fps=30)
anim.save('growthcoil2.gif',writer=writgif)
```



