PRAKTIKUM 1.
PLOTTING AREA DAN MEMBENTUK GAMBAR 2D

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Nama File : 1A_Plotting_NIM.ipynb

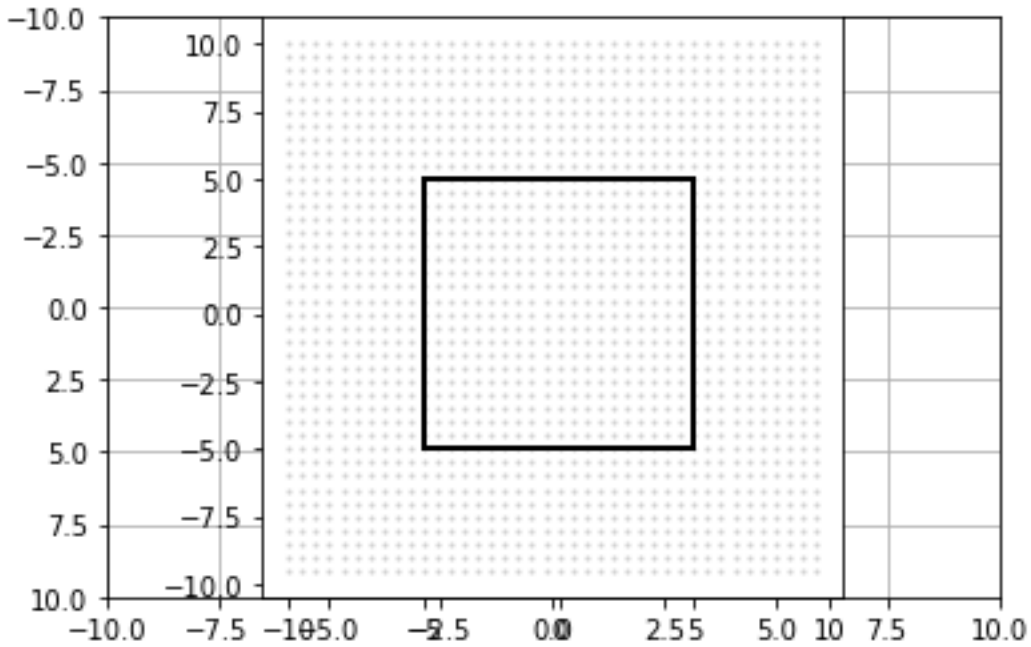
```
import numpy as np
import matplotlib.pyplot as plt
# Plotting Area

plt.axis([0,100,0,10])
plt.axis('on')
plt.grid(True)
plt.title('this is my plot')
plt.xlabel('this is the x axis')
plt.ylabel('this is the y axis')

# Color Intensity
plt.axis([0,100,0,10])
plt.scatter(60,50,s=1000,color='b',alpha=1)
plt.scatter(80,50,s=1000,color='b',alpha=.5)
plt.scatter(100,50,s=1000,color='b',alpha=.1)
plt.show()
```

```
# Over Plotting
#————————————————————————————————(A)
plt.text(45,10,'(A)') plt.plot([20,60],[20,20],linewidth=5,color='r')
plt.text(13,21,'1') plt.plot([30,30],[10,30],linewidth=5,color='g')
plt.text(28,6,'2')
#————————————————————————————————(B)
plt.text(45,75,'(B)')
plt.scatter(40,60,s=800,color='midnightblue')
plt.text(38,50,'1')
plt.plot([20,60],[60,60],linewidth=5,color='r')
plt.text(13,61,'2')
plt.scatter(60,60,s=800,color='b')
plt.text(58,50,'3')
#————————————————————(C)
plt.text(108,56,'(C)')
plt.scatter(100,40,s=800,color='r')
plt.text(98,30,'1')
plt.scatter(110,40,s=800,color='b')
plt.text(108,30,'2')
plt.scatter(120,40,s=800,color='y')
plt.text(118,30,'3')
```

```
#————————————————————————————————(A)
plt.plot([20,60],[20,20],linewidth=5,color='r')
plt.text(13,21,'1')
plt.arrow(30,30,0,-20,linewidth=5,head_length=4,head_width=2,color='g')
plt.text(22,10,'2')
plt.arrow(50,30,0,-20,linewidth=5,head_length=4,head_width=2,color='b')
plt.text(54,10,'3')
#————————————————————————————————(B)
plt.scatter(40,60,s=800,color='midnightblue')
plt.text(39,51,'1')
plt.arrow(20,60,60,0,linewidth=5,head_length=4,head_width=2,color='r')
plt.text(12,61,'2')
plt.scatter(60,60,s=800,color='b')
plt.text(58,51,'3')
#————————————————————————————————(C)
plt.arrow(90,40,40,0,linewidth=5,head_length=4,head_width=2,color='r')
plt.text(82,41,'1')
plt.arrow(100,50,0,-20,linewidth=5,head_length=4,head_width=2,color='b')
plt.text(92,29,'2')
```

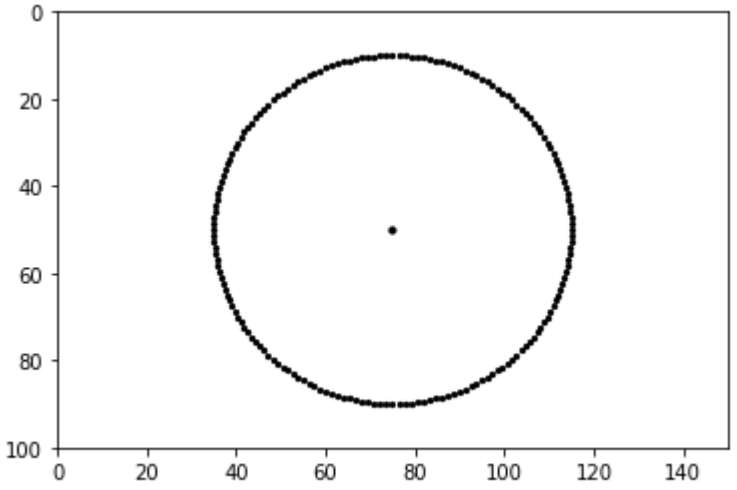
Nama File : 1B_Gambar2D_NIM.ipynb

```
1 import numpy as np
2 import matplotlib.pyplot as plt
3
4 plt.grid(True)
5 plt.axis('on')
6
7 plt.axis([-10,10,10,-10])
8 plt.axes().set_aspect('equal')
9 #----------------custom grid
10 x1=-10
11 x2=10
12 y1=10
13 y2=-10
14
15 dx=.5
16 dy=-.5
17 for x in np.arange(x1,x2,dx):
18   for y in np.arange(y1,y2,dy):
19       plt.scatter(x,y,s=1,color='lightgray')
20
21 #----------------square box
22 plt.plot([-5,5],[-5,-5],linewidth=2,color='k')
23 plt.plot([5,5],[-5,5],linewidth=2,color='k')
24 plt.plot([5,-5],[5,5],linewidth=2,color='k')
25 plt.plot([-5,-5],[5,-5],linewidth=2,color='k')
26 plt.show()
```



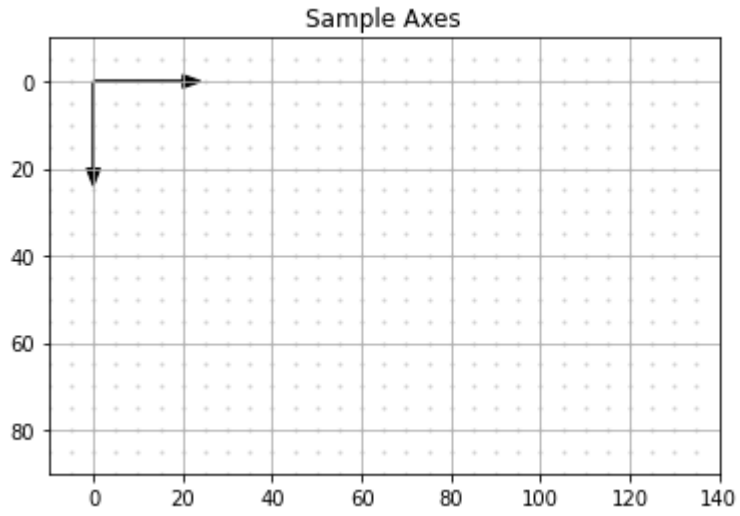
Ketik pada blok code yang berbeda dengan klik +code

```
import numpy as np
import matplotlib.pyplot as plt

plt.axis([0,150,100,0])
r=40
alpha1=np.radians(0)
alpha2=np.radians(360)
dalpha=np.radians(2)
xc=75
yc=50
plt.scatter(xc,yc,s=10,color='k')
for alpha in np.arange(alpha1,alpha2,dalpha):
  x=xc+r*np.cos(alpha)
  y=yc+r*np.sin(alpha)
  plt.scatter(x,y,s=5,color='k')

plt.show()

```



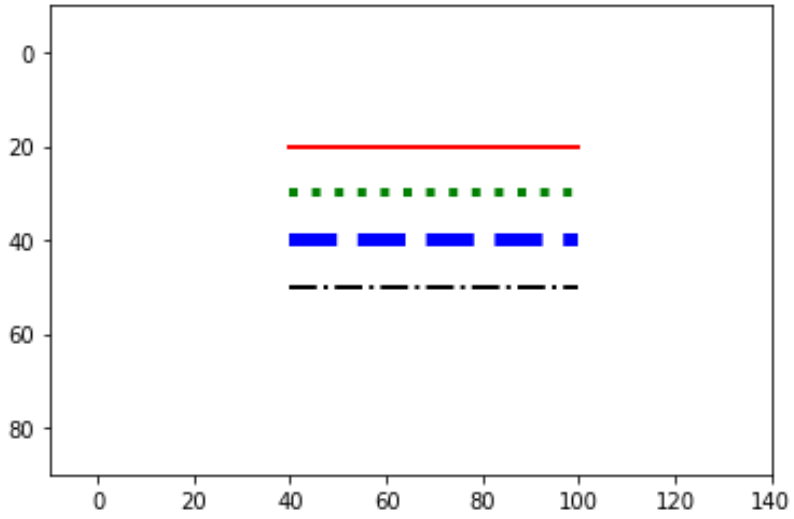
Ketik pada blok code yang berbeda dengan klik +code

```
import numpy as np
import matplotlib.pyplot as plt

plt.axis([-10,140,90,-10])

plt.axis('on')
plt.grid(True)

plt.title('Sample Axes')

#----------------grid
dx=5
dy=-5
for x in np.arange(x1,x2,dx):
   for y in np.arange(y1,y2,dy):
      plt.scatter(x,y,s=1,color='lightgray')

#-----------coordinate axes
plt.arrow(0,0,20,0,head_length=4,head_width=3,color='k')
plt.arrow(0,0,0,20,head_length=4,head_width=3,color='k')

plt.show()
```

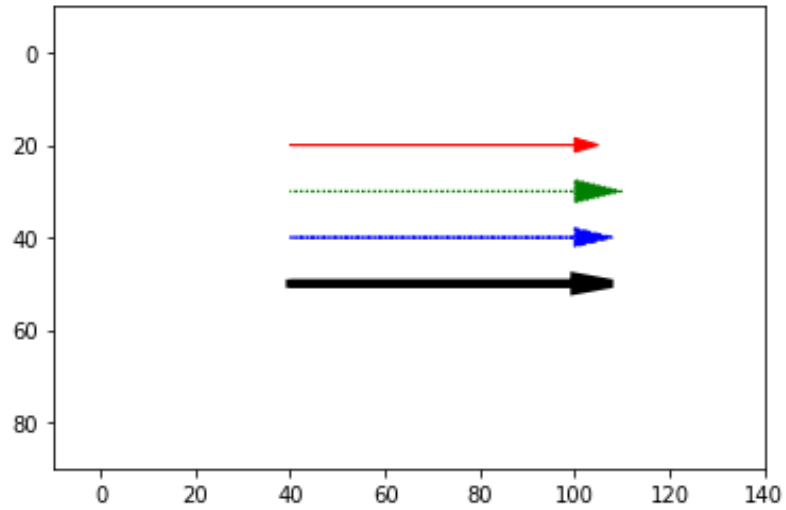


Ketik pada blok code yang berbeda dengan klik +code

```
import numpy as np
import matplotlib.pyplot as plt

plt.axis([-10,140,90,-10])
plt.plot([40,100],[20,20],linewidth=2,color='r')
plt.plot([40,100],[30,30],linewidth=4,color='g',linestyle=':')
plt.plot([40,100],[40,40],linewidth=6,color='b',linestyle='--')
plt.plot([40,100],[50,50],linewidth=2,color='k',linestyle='-.')
plt.show()
```




```
import numpy as np
import matplotlib.pyplot as plt

plt.axis([-10,140,90,-10])
plt.arrow(40,20,60,0,linewidth=1,color='r',head_length=5,
head_width=3)
plt.arrow(40,30,60,0,linewidth=1,color='g',linestyle=':',
head_length=10,head_width=5)
plt.arrow(40,40,60,0,linewidth=1,color='b',linestyle='--',
head_length=8,head_width=4)
plt.arrow(40,50,60,0,linewidth=4,color='k',linestyle='-',
head_length=8,head_width=3)
plt.show()
```



Ketik pada blok code yang berbeda dengan klik +code

```
# Program TEXT_SAMPLES
import numpy as np
import matplotlib.pyplot as plt

plt.axis([-10,140,90,-10])

plt.axis('on')
plt.grid(False)

plt.title('Text Samples')

#------------------text samples
plt.text(20,10,'small text',size='small')
plt.text(20,15,'normal text')
plt.text(20,20,'large text',size='large')

plt.text(20,30,'large bold text',size='large',fontweight='bold')
plt.text(20,35,'large bold,italic text',size='large',fontweight='bold',fontstyle='italic')
plt.text(20,40,'large, pure, bold italic text',size='large',fontweight='bold',fontstyle='italic',color=(.5,0,.5))
plt.text(20,45,'large, light purple, bold italic text',size='large',fontweight='bold',fontstyle='italic',color=(.8,0,.8))
plt.text(20,50,'light purple text',color=(.8,0,.8))

plt.text(100,50,'text at 45 degrees',rotation=45,color='k')
plt.text(100,40,'text at -60 degrees',rotation=-60,color='g')

plt.text(20,65,r'$P(\lambda)=2 \pi c^{2} h\int_{\lambda1}^{\lambda2}\frac{\lambda^{-5}\epsilon} {e^{\frac{hc}{\lambda k t}}-1}d\lambda$',size='large')

plt.show()
```