fseno

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Script que me permite graficar la función seno, proporcionando la amplitud de la

[1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

Inputs (A = amplitud de la onda, instang = intervalo del ángulos a considerar):

[2]:
```
A = 5.0
intang = 360
```

Determinación de los ángulos:

[3]:
```
theta = np.arange(0, intang+1, 10)
thetarad = theta*(np.pi/180.)
```

Cálculo de la función seno:

[4]:
```
sen = A * np.sin(thetarad)
```

Impresión de los resultados:

[5]:
```
print('i\t\tTheta\t\t\tAngulo(rad)\t\t\tAmplitud')
for i in range(len(theta)):
    print('{0:4d}\t\t{1:4d}\t\t{2:6f}\t\t {3:6f}'.format(i, theta[i], \
            thetarad[i], sen[i]))
```

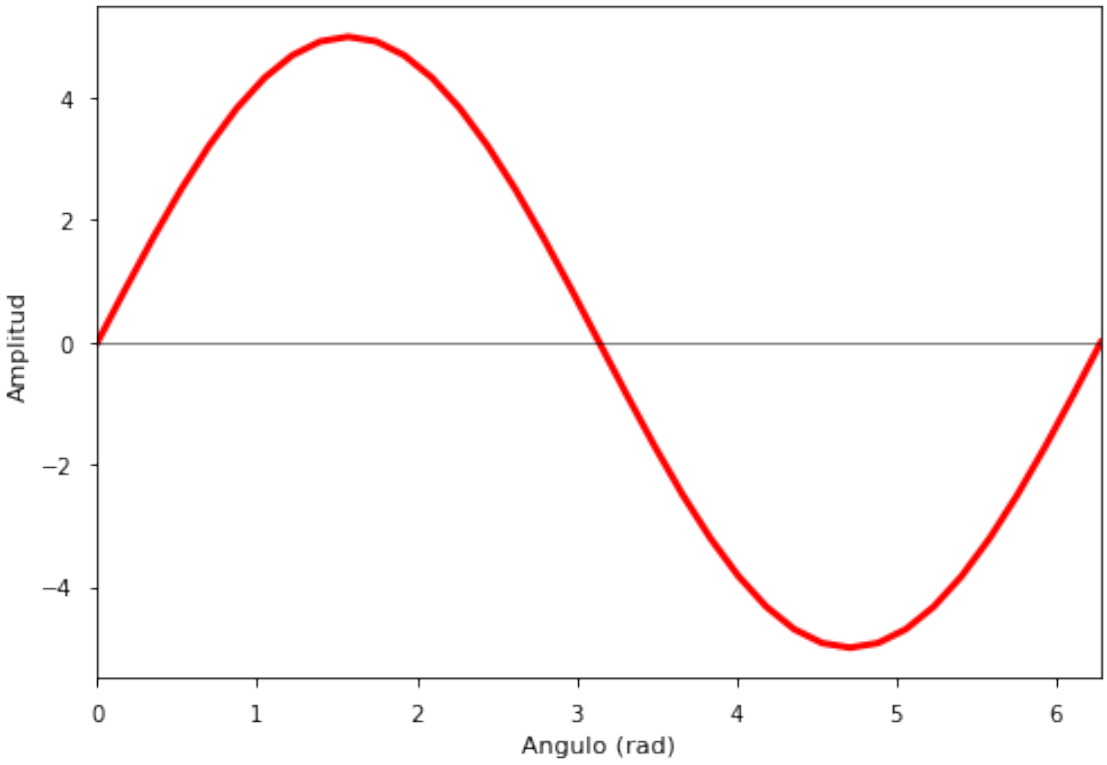
```
i               Theta                   Angulo(rad)                     Amplitud
   0                0           0.000000                0.000000
   1               10           0.174533                0.868241
   2               20           0.349066                1.710101
   3               30           0.523599                2.500000
   4               40           0.698132                3.213938
   5               50           0.872665                3.830222
   6               60           1.047198                4.330127
   7               70           1.221730                4.698463
   8               80           1.396263                4.924039
   9               90           1.570796                5.000000
  10              100           1.745329                4.924039
  11              110           1.919862                4.698463
  12              120           2.094395                4.330127
  13              130           2.268928                3.830222
```

14	140	2.443461	3.213938
15	150	2.617994	2.500000
16	160	2.792527	1.710101
17	170	2.967060	0.868241
18	180	3.141593	0.000000
19	190	3.316126	-0.868241
20	200	3.490659	-1.710101
21	210	3.665191	-2.500000
22	220	3.839724	-3.213938
23	230	4.014257	-3.830222
24	240	4.188790	-4.330127
25	250	4.363323	-4.698463
26	260	4.537856	-4.924039
27	270	4.712389	-5.000000
28	280	4.886922	-4.924039
29	290	5.061455	-4.698463
30	300	5.235988	-4.330127
31	310	5.410521	-3.830222
32	320	5.585054	-3.213938
33	330	5.759587	-2.500000
34	340	5.934119	-1.710101
35	350	6.108652	-0.868241
36	360	6.283185	-0.000000

Graficación:

[6]:
```
# Para usar LaTeX en las graficas
plt.rcParams['text.usetex'] = False
plt.style.use('seaborn-notebook')

fig, ax = plt.subplots()
ax.plot(thetarad, sen, color='r', linewidth=3)
ax.plot(thetarad, np.zeros((len(theta), 1)), color='k', linestyle='-', \
        linewidth=0.5)
ax.set_xlabel('Angulo (rad)')
ax.set_ylabel('Amplitud')
ax.set_xlim((thetarad[0], thetarad[-1]))
plt.savefig('funcionSeno.png')
plt.draw()
```


Amplitud
4
2
0
−2
−4
0
1
2
3
4
5
6
Angulo (rad)