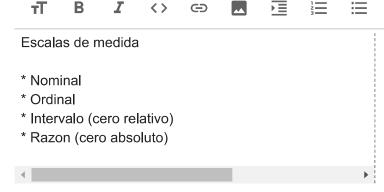
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## Estadisticas descriptivas



## Escalas de medida

- Nominal
- Ordinal
- Intervalo (cero relativo)
- Razon (cero absoluto)

- 1 import pandas as pd
- 2 import numpy as np

$$a_n = a_1 + r(n-1)$$

```
1 def prog(r, n, a1):
2 an = a1 + r*(n-1)
   seq = np.arange(start=a1, stop=an, step=r)
   return seq
6 prog(r=7, n=20, a1=15)
     array([ 15, 22, 29, 36, 43, 50, 57, 64, 71, 78, 85, 92, 99,
          106, 113, 120, 127, 134, 141])
 1 np.random.seed(123)
 2
 3 df1 = pd.DataFrame({
     'de': np.sort(np.random.normal(loc = 4, scale = 1, size=96)),
 5
     'dl': np.sort(np.random.normal(loc=4.5, scale=1.2, size=96)),
 6
     'ddd': np.repeat(prog(r=7, n=25, a1=15), 4)
 7 })
 9 df1['localidad'] = np.repeat(['l1','l2']*24, 2)
10 df1.head()
```

1 df1.tail()

1 df1.plot.scatter(x='ddd', y='de')

1 df1.plot.scatter(x='ddd', y='dl')

1 import matplotlib.pyplot as plt

```
1 df1['idx1'] = df1['de']/df1['dl']
2 df1['idx2'] = df1['dl']/df1['de']
3 df1.head()
```

```
1 plt.scatter(df1['ddd'], df1['idx2'])2 plt.xlabel('DDD')3 plt.ylabel('Indicie')4 plt.show()
```

```
1 a = df1['dl']/2
2 b = df1['de']/2
```

```
4 df1['e'] = np.sqrt(np.abs(1-(b/a)**2))
5 df1.head()
```

```
1 plt.scatter(df1['ddd'],
2 df1['e'])
3 plt.xlabel('DDD')
4 plt.ylabel('E')
5 plt.show()
```

## → Asignación

- 1. Convertir en coordenadas polares los datos de de y dl
- 2. Graficar un cardioide en coordenadas polares en Python

```
1 ## Coordenadas polares:
```

- 2 import numpy as np
- 3 import matplotlib.pyplot as plt
- 4 x = df1['de']
- 5 y = df1['dl']
- 6 # r:
- 7  $r = np.sqrt(x^{**}2 + y^{**}2)$

```
8 # Tetha
9 t = np.arctan(y/x)
10 cop = [[r],[t]]
11 print(cop)
          1.868871
      [[0
          2.600002
      2
          2.836354
      3
          3.165198
          3.208826
      91 8.798825
      92 8.923382
      93 9.108493
      94 9.265779
      95 9.944633
      Length: 96, dtype: float64], [0
                                    0.872578
         0.920876
      2
          0.847673
      3
          0.789708
      4
          0.783921
      91 0.806804
      92 0.804706
      93 0.821212
      94 0.832207
      95 0.872654
      Length: 96, dtype: float64]]
 1 ## Cardioide:
 2 import numpy as np
 3 import matplotlib.pyplot as plt
 4 import math
 5
 6
 7 plt.axes(projection = 'polar')
 9 rads = np.arange(0,(2 * np.pi), 0.01)
10
11 for rad in rads:
12
      r = a + (a*np.cos(rad))
13
      plt.polar(rad,r,'r.')
14
15 plt.show()
```

✓ 3 s completado a las 14:56

×