file2

January 9, 2017

```
In [1]: [x**0.5 for x in range(100) if x**2<25]

Out[1]: [0.0, 1.0, 1.4142135623730951, 1.7320508075688772, 2.0]

In [5]: L=[]
        for x in range(100):
            if x**2<25:
                L.append(x**0.5)
        L

Out[5]: [0.0, 1.0, 1.4142135623730951, 1.7320508075688772, 2.0]

In [10]: M=list(filter(lambda x: x**2 < 25, range(100)))
         L=list(map(lambda x: x**0.5, M))
         L

Out[10]: [0.0, 1.0, 1.4142135623730951, 1.7320508075688772, 2.0]

In [2]: mx=5
        [x/(mx-1) for x in range(mx)]

Out[2]: [0.0, 0.25, 0.5, 0.75, 1.0]

In [7]: mx=5
        my=6
        X=[[x/(mx-1) for x in range(mx)] for y in range(my) ]
        X

Out[7]: [[0.0, 0.25, 0.5, 0.75, 1.0],
         [0.0, 0.25, 0.5, 0.75, 1.0],
         [0.0, 0.25, 0.5, 0.75, 1.0],
         [0.0, 0.25, 0.5, 0.75, 1.0],
         [0.0, 0.25, 0.5, 0.75, 1.0],
         [0.0, 0.25, 0.5, 0.75, 1.0]]

In [13]: mx=5
         my=6
         Y=[[y/(my-1) for x in range(mx)] for y in range(my) ]
         Y
```

```
Out[13]: [[0.0, 0.0, 0.0, 0.0, 0.0],
          [0.2, 0.2, 0.2, 0.2, 0.2],
          [0.4, 0.4, 0.4, 0.4, 0.4],
          [0.6, 0.6, 0.6, 0.6, 0.6],
          [0.8, 0.8, 0.8, 0.8, 0.8],
          [1.0, 1.0, 1.0, 1.0, 1.0]]

In [16]: a=[[1,2,3,4,5],
            [5,6,7,8,9],
           [9,10,11,12,13],
           [13,14,15,16,17],
           [10,25,40,25,10],
           [10,25,40,25,10]]
         sum([sum(c) for c in a])

Out[16]: 400

In [15]: X

Out[15]: [[0.0, 0.25, 0.5, 0.75, 1.0],
          [0.0, 0.25, 0.5, 0.75, 1.0],
          [0.0, 0.25, 0.5, 0.75, 1.0],
          [0.0, 0.25, 0.5, 0.75, 1.0],
          [0.0, 0.25, 0.5, 0.75, 1.0],
          [0.0, 0.25, 0.5, 0.75, 1.0]]

In [17]: aX1=sum([sum([a[i][j]*X[i][j] for i in range(my)]) for j in range(mx)])
         aX1

Out[17]: 210.0

In [18]: a0=sum([sum([a[i][j] for i in range(my)]) for j in range(mx)])
         a0

Out[18]: 400

In [19]: aX2=sum([sum([a[i][j]*X[i][j]*X[i][j] for i in range(my)]) for j in range
         aX2

Out[19]: 148.75

In [20]: ax=aX1/a0
         ax

Out[20]: 0.525

In [21]: aY1=sum([sum([a[i][j]*Y[i][j] for i in range(my)]) for j in range(mx)])
         aY1

Out[21]: 272.0
```

```
In [22]: ay=aY1/a0
         ay

Out[22]: 0.68

In [32]: P=[[x,y,z] for x in range(1,100) for y in range(x,100) for z in range(y,10

In [29]: def centroids(A):
             my=len(A)
             mx=len(A[0])
             A0=sum([sum([A[i][j] for i in range(my)]) for j in range(mx)])
             X=[[x/(mx-1) for x in range(mx)] for y in range(my) ]
             Y=[[y/(my-1) for x in range(mx)] for y in range(my) ]
             AX=sum([sum([A[i][j]*X[i][j] for i in range(my)]) for j in range(mx)])
             AY=sum([sum([A[i][j]*Y[i][j] for i in range(my)]) for j in range(mx)])
             Ax=AX/A0
             Ay=AY/A0
             return (Ax,Ay)

In [30]: centroids(P)

Out[30]: (0.6032110091743119, 0.6095820591233435)

In [37]: P=[[x,y,z] for x in range(1,700) for y in range(x,700) for z in range(y,70
         centroids(P)

(0.6211705452606423, 0.6172816608575836)


In [ ]:

In [ ]:
```