

```
disp('Grupo 5')
Grupo 5
disp('NRC: 7543')
NRC: 7543
date
```

```
ans =
```

```
'08-Jan-2022'
```

```
clock
```

```
ans =
```

```
1.0e+03 *
```

```
Columns 1 through 4
```

```
2.0220000000000000 0.0010000000000000 0.0080000000000000
0.0220000000000000
```

```
Columns 5 through 6
```

```
0.0180000000000000 0.0099230000000000
```

```
clc
```

```
data1 = readtable('C:\Users\ismae\OneDrive\Escritorio\Ejercicio1.csv');
```

```
[ Warning: Column headers from the file were modified to make them valid
MATLAB
```

```
identifiers before creating variable names for the table. The original
column
```

```
headers are saved in the VariableDescriptions property.
```

```
Set 'PreserveVariableNames' to true to use the original column headers as
table
```

```
variable names.]
```

```
data1
```

```
data1 =
```

```
47×4 <a href="matlab:helpPopup table" style="font-
weight:bold">table</a>
```

Diametro_mm_	Seccion_mm2_	Capacidad_A_	Resistencia_O_Km_
_____	_____	_____	_____
0.05	0	0.01	8500
0.06	0	0.01	6800
0.07	0	0.01	4250
0.08	0.01	0.01	3400
0.09	0.01	0.02	2696
0.1	0.01	0.02	2152
0.11	100	0.03	1700
0.13	0.01	0.04	1338
0.14	0.02	0.05	1069
0.16	0.02	0.06	845.8
0.18	0.03	0.07	669.3

0.2	0.03	0.09	531.2
0.23	0.04	0.11	425
0.25	0.05	0.15	333.3
0.29	0.06	0.18	265.6
0.32	0.08	0.23	212.5
0.36	0.1	0.29	170
0.4	0.13	0.37	130.7
0.45	0.16	0.46	106.2
0.51	0.2	0.58	85
0.57	0.26	0.73	56.4
0.64	0.33	0.92	51.5
0.72	0.41	1.2	41.46
0.81	0.52	1.6	32.69
0.91	0.65	2	26.15
1.02	0.82	2.5	20.73
1.15	1.04	3.2	16.34
1.29	1.31	3.7	12.9
1.45	1.65	4.8	10.3
1.63	2.08	6	8.17
1.83	2.63	7.5	6.49
2.05	3.31	9.5	5.13
2.31	4.17	12	4.07
2.59	5.26	15	3.23
2.91	6.63	19	2.56
3.26	8.36	24	2.03
3.67	10.55	30	1.7
4.12	13.3	38	1.27
4.62	16.77	48	1.01
5.19	21.15	60	0.8
5.83	26.67	78	1.63
6.54	33.63	96	1.5
7.35	42.41	120	1.4
8.25	53.48	150	0.32
9.23	67.43	190	0.25
10.4	85.3	240	0.2
11.86	107.2	319	0.16

```
data = readtable('C:\Users\ismae\OneDrive\Escritorio\Ejercicio.csv');
[ Warning: Column headers from the file were modified to make them valid
MATLAB
identifiers before creating variable names for the table. The original
column
headers are saved in the VariableDescriptions property.
Set 'PreserveVariableNames' to true to use the original column headers as
table
variable names.]
data = data{:, :};
m = [data(:,1) data(:,4)]
```

m =

1.0e+03 *

0.0000500000000000	8.500000000000000
0.0005100000000000	0.085000000000000
0.0010200000000000	0.020730000000000
0.0020500000000000	0.005130000000000
0.0029100000000000	0.002560000000000

0.0036700000000000	0.0017000000000000
0.0046200000000000	0.0010100000000000
0.0058300000000000	0.0016300000000000
0.0065400000000000	0.0015000000000000
0.0073500000000000	0.0014000000000000
0.0082500000000000	0.0003200000000000
0.0092300000000000	0.0002500000000000
0.0104000000000000	0.0002000000000000
0.0118600000000000	0.0001600000000000

[Pn,Rt] = fnwt(m',4)

x	y
Δ1	Δ2
Δ3	Δ4
Δ5	Δ6
Δ7	Δ8
Δ9	Δ10
Δ11	Δ12
Δ13	

_____	_____

0	0.05	8500	-18293.4782608696	
18729.338817553	-9328.67136436899		3252.22138662974	-
896.189960139518	195.700450475408		-33.8006501107538	
5.1996773252748	-0.711130080924472		0.0865694744378037	-
0.00940959361620985	0.000906410125433632		-7.6416746691535e-05	
1	0.51	85	-126.019607843137	
71.9960888150494	-27.3181986079157		8.01373092468995	-
1.83890146690556	0.332692835250391		-0.0547442697203731	
0.00842773452615483	-0.00126039053448169		0.000189405040997335	-
2.82488179717584e-05	3.92834700660379e-06			0
2	1.02	20.73	-15.1456310679612	
6.43241215605181	-1.99480888589543		0.455845895708085	-
0.0689755833734811	0.00258488883654139		0.00290143443852594	-
0.00132768821073347	0.000391221423015069		-8.9975768743356e-05	
1.63379205531946e-05		0		0
3	2.05	5.13	-2.98837209302325	
1.14616860842891	-0.353763661346326		0.124073339681641	-
0.0547069969957726	0.0209509688324106		-0.00669775132507701	
0.00188423967222025	-0.00045275128779761		8.71272900532731e-05	
0	0		0	
4	2.91	2.56	-1.13157894736842	
0.236995998768852	0.115233562650279		-0.121561076829378	
0.0563331378160036	-0.0205750893830669		0.00683108952146438	-

0.0018962335808898	0.000401967427624999		0
0	0	0	
5 	3.67	1.7	-0.726315789473684
0.573478001707667	-0.326033146240362	0.128558055073678	-
0.0535378394895735	0.022597396392588	-0.00737169999940019	
0.00170137489635395		0	0
0	0	0	
6 	4.62	1.01	0.512396694214876
0.362237128002173	0.147060496430774	-0.116645249788568	-
0.072103684453216	-0.0270141446033752	0.00656256040173863	
0	0	0	
0	0	0	
7 	5.83	1.63	-0.183098591549296
0.0392380272538412	-0.276361760301728	0.215752735540758	-
0.0840380713542929	0.0204987927052125		0
0	0	0	
0	0	0	
8 	6.54	1.5	-0.123456790123457
0.629557432676341	0.457197540536848	-0.168301250548361	-
0.0395696486581383		0	0
0	0	0	
0	0	0	
9 	7.35	1.4	-1.2
0.600303951367781	-0.192445286579825	0.0422092803129351	
0	0	0	0
0	0	0	
0	0		
10	8.25	0.32	-0.0714285714285714
0.0133458272993157	-0.00208143236848742		0
0	0	0	0
0	0	0	
0	0		
11	9.23	0.25	-0.0427350427350427
0.00583185644907609		0	0
0	0	0	0
0	0	0	
0	0		
12	10.4	0.2	-0.0273972602739726
0	0	0	0
0	0	0	0
0	0	0	
0	0		
13	11.86	0.16	0
0	0	0	0
0	0	0	0
0	0	0	
0	0	0	

Elapsed time is 1.216647 seconds.

Pn =

-4.70732441590063891553594823077

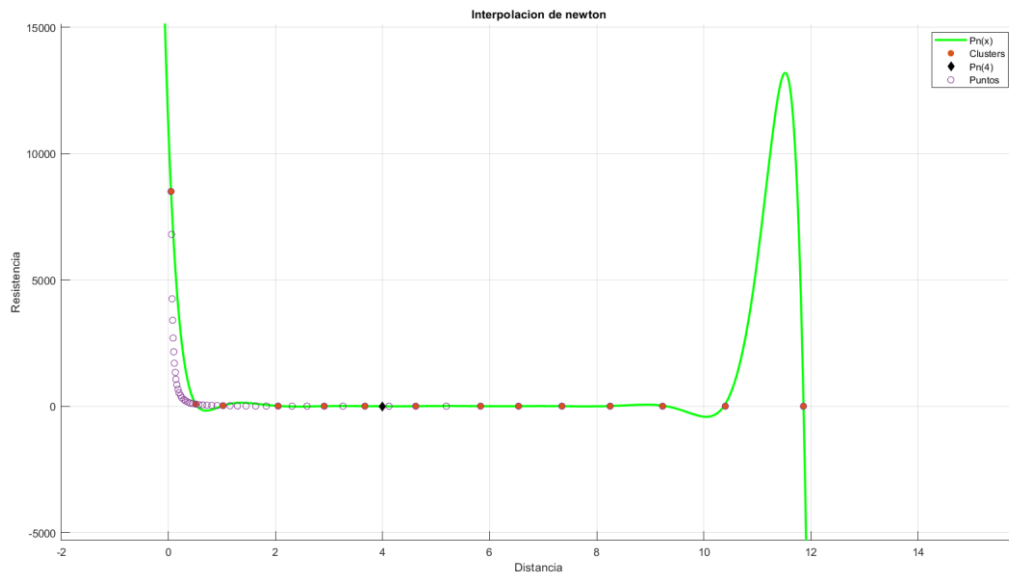
Rt =

"0.044237334612086814618859933885248%"

```

data1 = data1{:, :};
scatter(data1(:,1),data1(:,4))
legend('Pn(x)', 'Clusters', 'Pn(4)', 'Puntos')
xlabel('Distancia')
ylabel('Resistencia')
disp('Aqui va la figura 1')
Aqui va la figura 1

```



```

data2 = readtable('C:\Users\ismae\OneDrive\Escritorio\Ejercicio2.csv');
[ Warning: Column headers from the file were modified to make them valid
MATLAB
identifiers before creating variable names for the table. The original
column
headers are saved in the VariableDescriptions property.
Set 'PreserveVariableNames' to true to use the original column headers as
table
variable names.]
data2 = data2{:, :};
data2

```

data2 =

```

1.0e+03 *

      0      8.500000000000000
0.001040000000000 0.016340000000000
0.003310000000000 0.005130000000000
0.005260000000000 0.003230000000000
0.008360000000000 0.002030000000000
0.010550000000000 0.001700000000000
0.013300000000000 0.001270000000000
0.016770000000000 0.001010000000000
0.021150000000000 0.000800000000000
0.026670000000000 0.001630000000000
0.033630000000000 0.001500000000000
0.042410000000000 0.001400000000000

```

0.0534800000000000	0.0003200000000000
0.0674300000000000	0.0002500000000000
0.0853000000000000	0.0002000000000000
0.1072000000000000	0.0001600000000000

[Pn,Rt] = fnwt(data2',4)

x	y
 $\Delta 1$ 	 $\Delta 2$
 $\Delta 3$ 	 $\Delta 4$
 $\Delta 5$ 	 $\Delta 6$
 $\Delta 7$ 	 $\Delta 8$
 $\Delta 9$ 	 $\Delta 10$
 $\Delta 11$ 	 $\Delta 12$
 $\Delta 13$ 	 $\Delta 14$
 $\Delta 15$ 	

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

0	0	8500	-8157.36538461538
2462.96889988646	-468.066458404846		55.975361407285
-5.30469936198559	0.398786016329654		-0.0237764592058149
0.00112404443328679	-4.2141672200209e-05		1.25296839204567e-06
-2.95413844272584e-08	5.5233471668033e-10		-8.19060736319521e-12
9.60147999039386e-14	-8.95608850995203e-16		
1	1.04	16.34	-4.93832599118943
0.939328676974041	-0.112437039943556		0.0107831383370007
0.00084534480118492	5.47954481377808e-05		-2.91944179925577e-06
1.2603570721926e-07	-4.34517571298632e-09		1.18278485646881e-10
-2.52377919431723e-12	4.20621800772878e-14		-5.44931389246424e-16
5.53107725277533e-18	0		0
2	3.31	5.13	-0.974358974358974
0.116289544587213	-0.00988939435867889		0.000419211074473598
1.65875980223723e-05	-3.91452644525279e-06		3.10853376773856e-07
-1.55735692669644e-08	5.4800523822513e-10		-1.40684953031147e-11
2.68728941013909e-13	-3.85373878061591e-15		4.22477719082051e-17
0	0		
3	5.26	3.23	-0.387096774193548
0.0446903294303779	-0.00570147572468765		0.000642480143854728
5.32475537609376e-05	3.34700843618449e-06		-1.61337243400505e-07
5.85343554763815e-09	-1.57811171132137e-10		3.16240439469708e-12
-4.72391016087895e-14	5.35382242927521e-16		0
0	0		
4	8.36	2.03	-0.150684931506849
0.00114953539611076	0.00169347073108027		-0.000203623485406569

1.84118968577724e-05	-1.23012915908784e-06	5.61178871942519e-08	
-1.75621912435348e-09	3.87955100861811e-11	-6.18613298070429e-13	
7.33776423524199e-15	0	0	
0	0		
5 	10.55	1.7	-0.156363636363636
0.0130925534522743	-0.000910873647269748	0.000133498346059244	-
1.26734669923774e-05	6.80684899876431e-07	-2.3122719696577e-08	
5.35431656437241e-10	-8.8005970673577e-12	1.06651318940889e-13	
0	0	0	
0	0		
6 	13.3	1.27	-0.0749279538904899
0.00343729279121502	0.00124111969120527	-0.000159005272124826	
9.01315391768571e-06	-3.11973456697619e-07	7.33263292157332e-09	
-1.22412974347747e-10	1.50725290827925e-12	0	
0	0	0	
0	0		
7 	16.77	1.01	-0.0479452054794521
0.0200310630626295	-0.00199145749109244	0.000103367638419005	-
3.52193957242461e-06	8.4941963347145e-08	-1.48110123146445e-09	
1.91180737396745e-11	0	0	
0	0	0	
0	0		
8 	21.15	0.8	0.15036231884058
0.0135449102371891	0.00065888757970852	-2.59227632847024e-05	-
7.81220290741751e-07	-1.65579040451141e-08	2.47746176814313e-10	
0	0	0	
0	0	0	
0	0		
9 	26.67	1.63	-0.0186781609195402
0.000463064757271225	-0.000179194179023577	1.02321117708258e-05	
-2.80969253752318e-07	4.76065446975754e-09	0	0
0	0	0	
0	0	0	
0	0		
10	33.63	1.5	-0.0113895216400911
0.00434113118235088	0.000237866696755284	-6.24111557667258e-06	-
1.02406250697256e-07	0	0	0
0	0	0	
0	0	0	
0	0		
11	42.41	1.4	-0.0975609756097561
0.00369876316797772	-8.46117450913878e-05	1.29291228712457e-06	
0	0	0	
0	0	0	
0	0	0	
0	0	0	
0	0		
12	53.48	0.32	-0.0050179211469534
6.97654210081e-05	-8.43958008587221e-07	0	0
0	0	0	
0	0	0	
0	0	0	
0	0		
13	67.43	0.25	-0.00279798545047566
2.44279967867945e-05	0	0	0
0	0	0	
0	0	0	
0	0	0	
0	0		

```

    <strong>14</strong>      85.3      0.2      -0.00182648401826484
0      0      0
0      0      0
0      0      0
0      0      0
0      0      0
    <strong>15</strong>      107.2      0.16      0
0      0      0
0      0      0
0      0      0
0      0      0
0      0      0

```

Elapsed time is 1.659940 seconds.

Pn =

95.331044302117236711651781590951

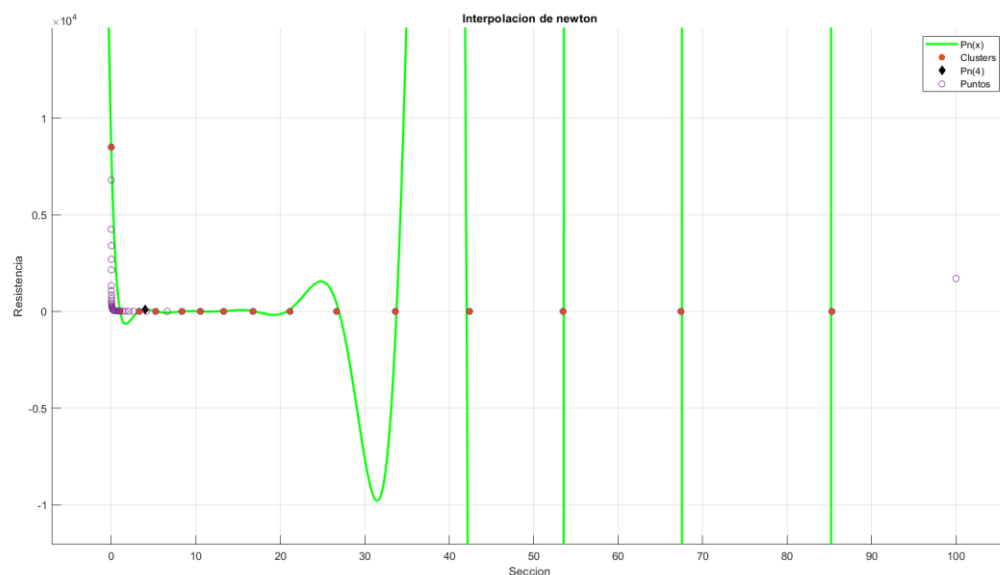
Rt =

"1.4948292532118791462571%"

```

xlabel('Seccion')
ylabel('Resistencia')
scatter(data1(:,2),data1(:,4))
legend('Pn(x) ','Clusters','Pn(4) ','Puntos')
disp('Aqui va la figura 2')
Aqui va la figura 2

```



```

data3 = readtable('C:\Users\ismae\OneDrive\Escritorio\Ejercicio3.csv');
[ Warning: Column headers from the file were modified to make them valid
MATLAB
identifiers before creating variable names for the table. The original
column
headers are saved in the VariableDescriptions property.

```


Set 'PreserveVariableNames' to true to use the original column headers as table variable names.]
data3

data3 =

15×2 [table](matlab:helpPopup table)

Capacidad_A_	Resistencia_O_Km_
_____	_____

0.73	56.4
9.5	5.13
19	2.56
24	2.03
30	1.7
38	1.27
48	1.01
60	0.8
78	1.63
96	1.5
120	1.4
150	0.32
190	0.25
240	0.2
319	0.16

data3 = data3{:, :};
data3

data3 =

1.0e+02 *

0.007300000000000000	0.5640000000000000
0.09500000000000000	0.0513000000000000
0.19000000000000000	0.0256000000000000
0.24000000000000000	0.0203000000000000
0.30000000000000000	0.0170000000000000
0.38000000000000000	0.0127000000000000
0.48000000000000000	0.0101000000000000
0.60000000000000000	0.0080000000000000
0.78000000000000000	0.0163000000000000
0.96000000000000000	0.0150000000000000
1.20000000000000000	0.0140000000000000
1.50000000000000000	0.0032000000000000
1.90000000000000000	0.0025000000000000
2.40000000000000000	0.0020000000000000
3.19000000000000000	0.0016000000000000

[Pn,Rt] = fnwt(data3',23)

x	y
Δ1	Δ2
Δ3	Δ4
Δ5	Δ6
Δ7	Δ8

[illegible]

4.27353819353323e-15		0		0
0	0		0	
0				
7 	60	0.8	0.0461111111111111	-
0.00148148148148148	2.59038800705467e-05		-3.90021120473795e-07	
4.42011646309494e-09	-3.45742030648501e-11		1.71542943721028e-13	
0	0		0	
0	0		0	
0				
8 	78	1.63	-0.0072222222222222	
7.27513227513225e-05	-9.19802077209484e-06		1.84594019728546e-07	
-1.80324008857808e-09	9.85541935889619e-12			0
0	0		0	
0	0		0	
0				
9 	96	1.5	-0.0041666666666667	-
0.000589506172839506	1.14765094375023e-05		-1.07530874621103e-07	
5.71915976915899e-10		0		0
0	0		0	
0	0		0	
0				
10	120	1.4		-0.036
0.000489285714285714	-4.00793650793651e-06		2.00063882311423e-08	
0	0		0	
0	0		0	
0	0		0	
0				
11	150	0.32		-0.00175
8.33333333333334e-06	-2.66652499391795e-08			0
0	0		0	
0	0		0	
0	0		0	
0				
12	190	0.25		-0.001
3.82690609361201e-06		0		0
0	0		0	
0	0		0	
0	0		0	
0				
13	240	0.2	-0.000506329113924051	
0	0		0	
0	0		0	
0	0		0	
0	0		0	
0				
14	319	0.16		0
0	0		0	
0	0		0	
0	0		0	
0	0		0	
0				

Elapsed time is 1.394491 seconds.

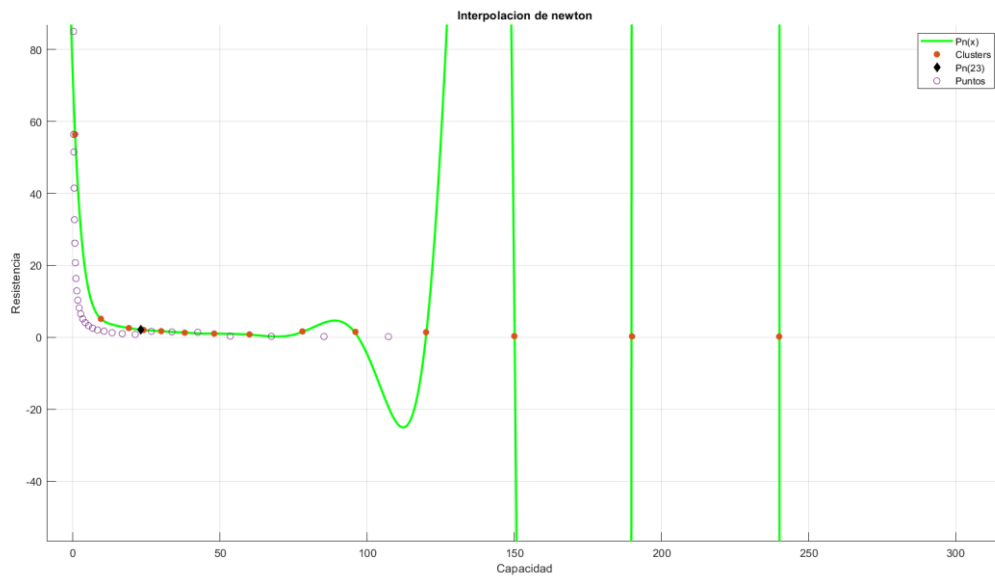
Pn =

2.10807980132871231561086769375

Rt =

"2.9888652858761%"

```
xlabel('Capacidad')
ylabel('Resistencia')
scatter(data1(:,2),data1(:,4))
legend('Pn(x)', 'Clusters', 'Pn(23)', 'Puntos')
disp('Aqui va la figura 3')
Aqui va la figura 3
```



diary off