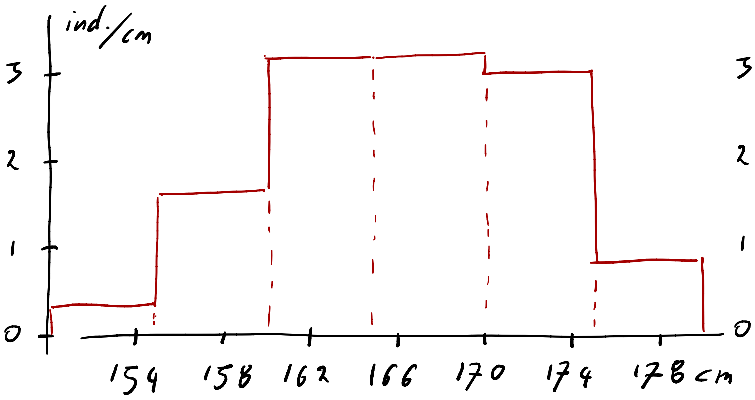
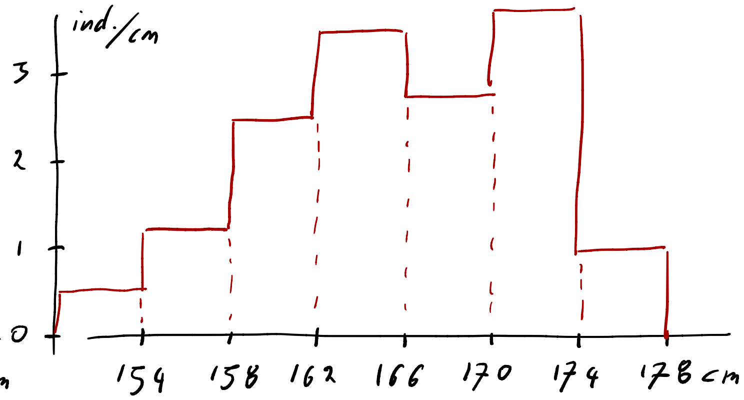
F — n. 61   media 165.3   dev.st. 5.9

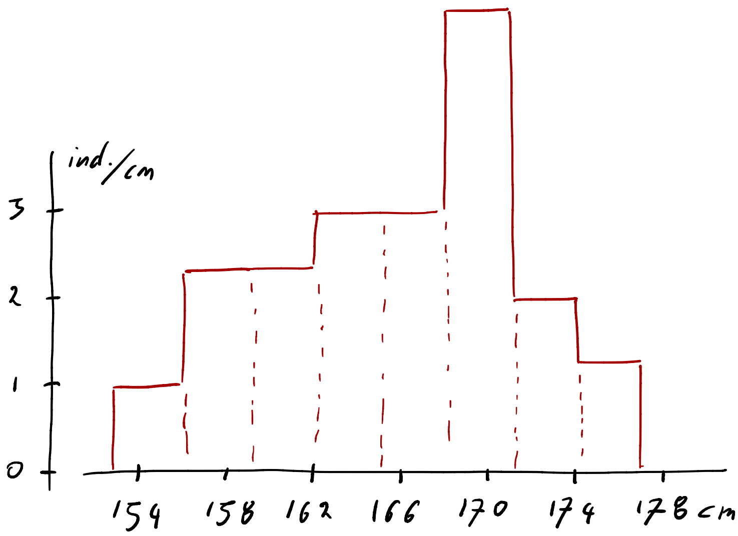
15	3356677888
16	00000002333334445555567778888889
17	0000000001223335566

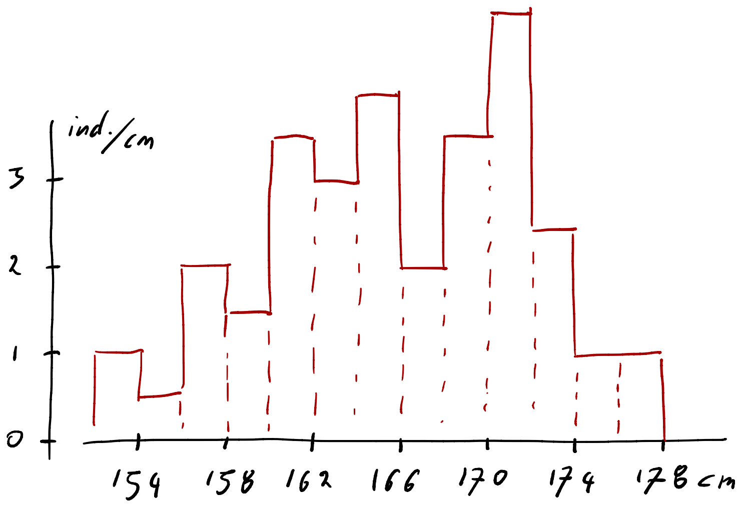
M — n. 22   media 178.0   dev.st. 5.3

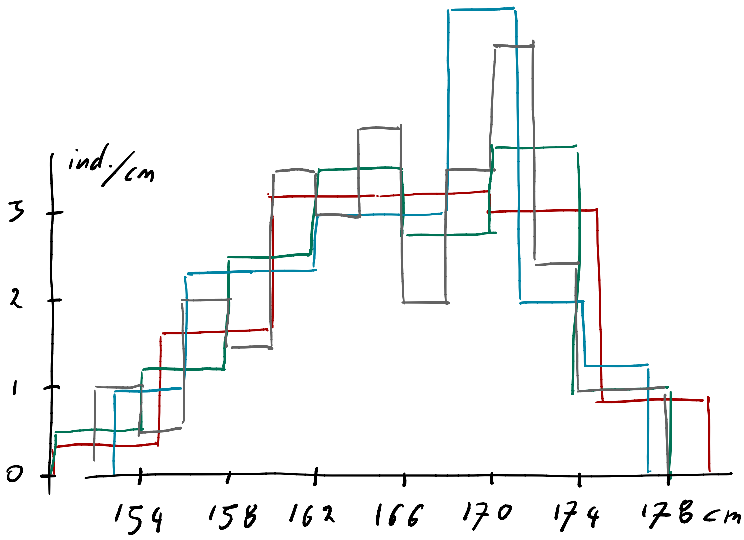
17	02233335557888
18	03344559











1° - quart. = 160 cm

2° - q. = 170 cm

mediana = 165 cm

```
F — n. 61   media 165.3 cm dev.st. 5.9 cm
   15 | 3356677888
   16 | 0000000233333444555556777788888889
   17 | 000000000012233335566
M — n. 22   media 178.0   dev.st. 5.3
   17 | 02233335557888
   18 | 03344559
```

$$\frac{22+1}{2} = 11.5$$

mediana = 177.5 cm.

Mediana

128 72 86 91 415

72 86 $\boxed{91}$ 128 415

54 81 49 68

49 $\underbrace{54 \quad 68}$ 81

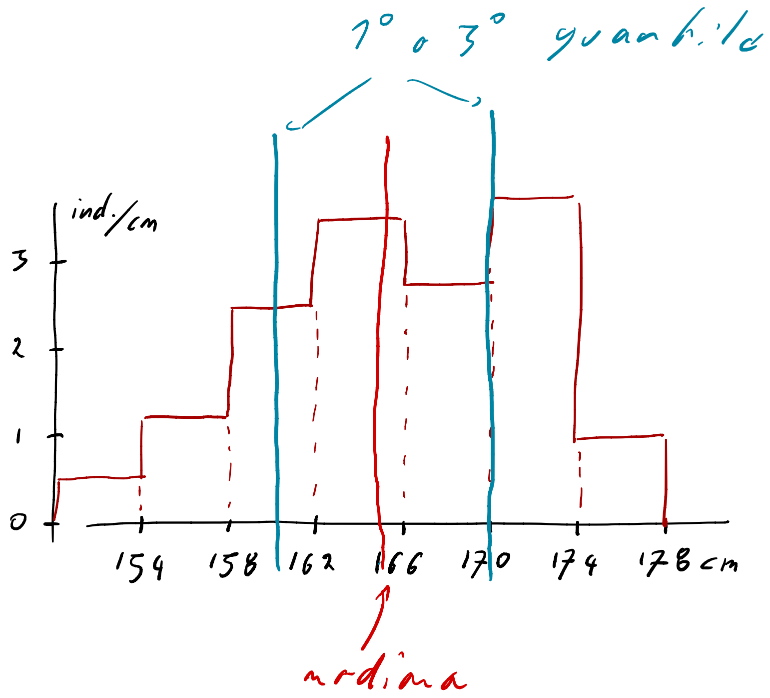
$\boxed{61}$

MEDIANA $\longrightarrow$ $\frac{n+1}{2}$ - esimo individuo

k-ESIMO QUARTILE $\longrightarrow$ $\frac{(n+1) \cdot k}{4}$ - esimo individuo

DISTANZA INTERQUART. = 3° - QUART. - 1° QUART.

k-ESIMO PERCENTILE $\longrightarrow$ $\frac{(n+1) \cdot k}{100}$ - esimo ind.



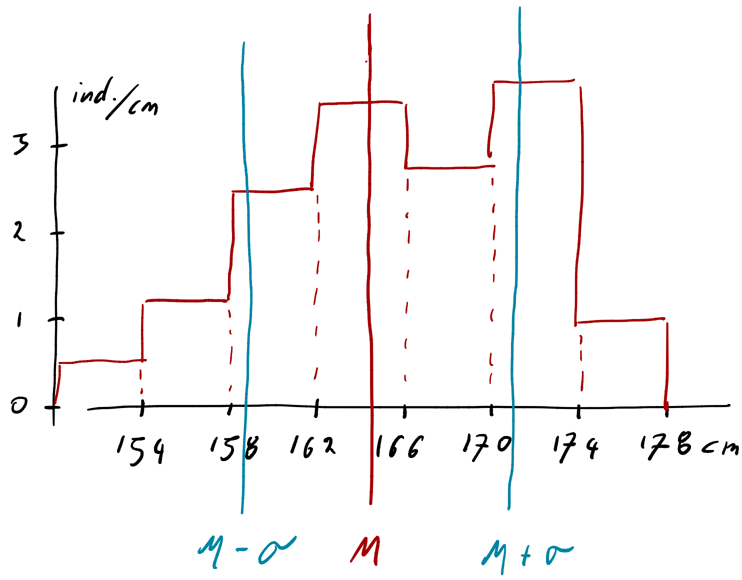
$x_1 \; - - - - - \; x_n$

$$\mu = \frac{x_1 + \ldots + x_n}{n}$$ MEDIA

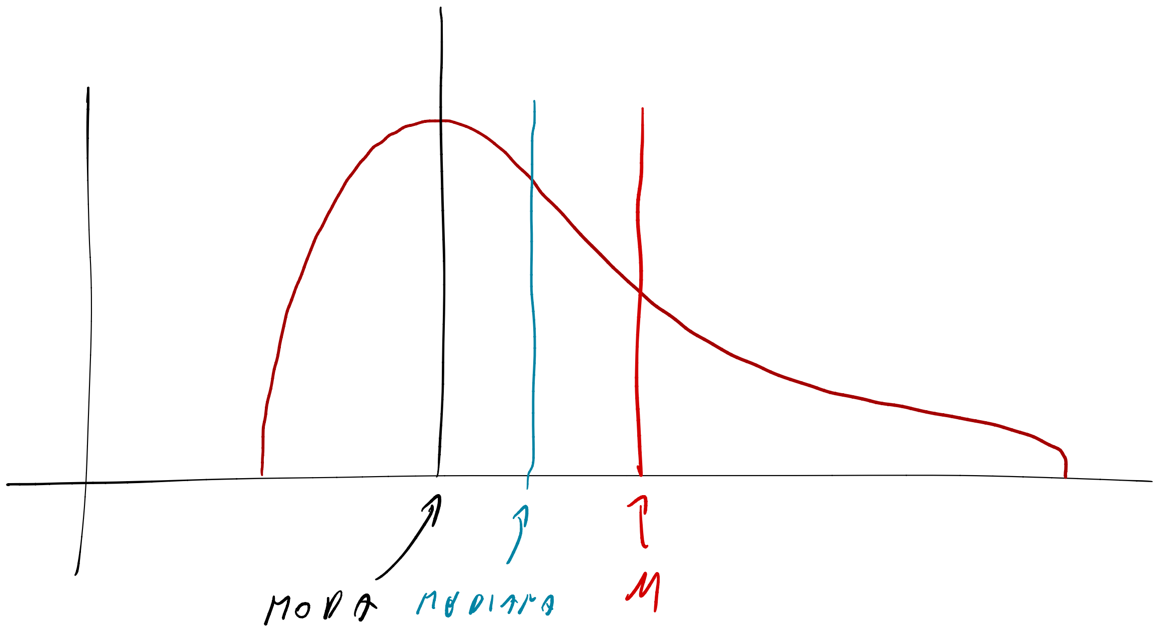
$$\sigma^2 = \frac{(x_1-\mu)^2 + (x_2-\mu)^2 + (x_3-\mu)^2 + \ldots}{n}$$

VARIANZA

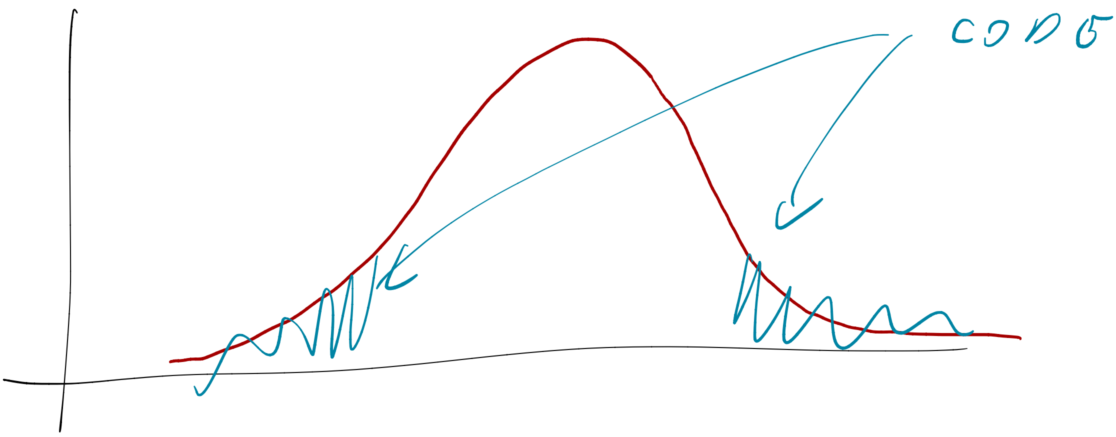
$$\sigma = \sqrt{\sigma^2}$$ DEVIAZIONE STANDARD



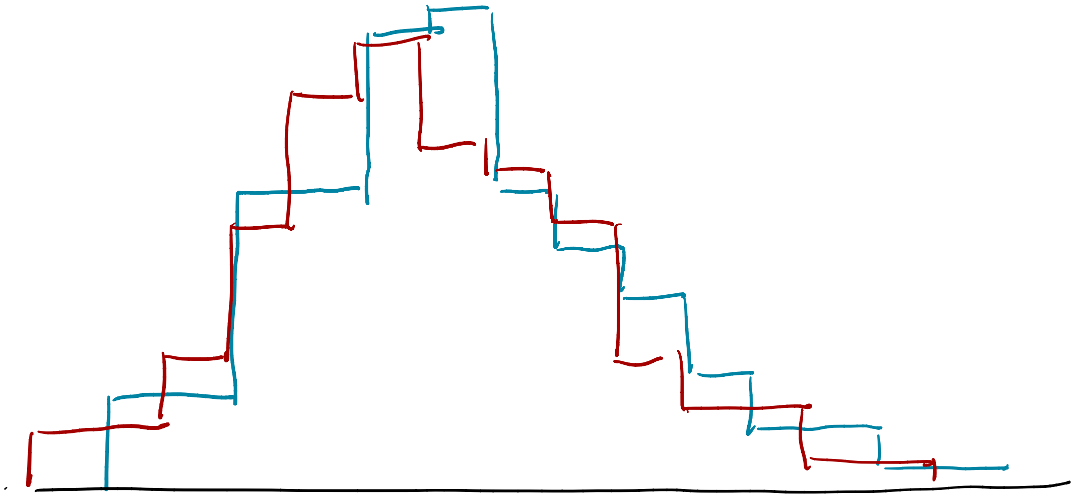
ind./cm
3
2
1
0
154
158
162
166
170
174
178 cm
M - σ
M
M + σ

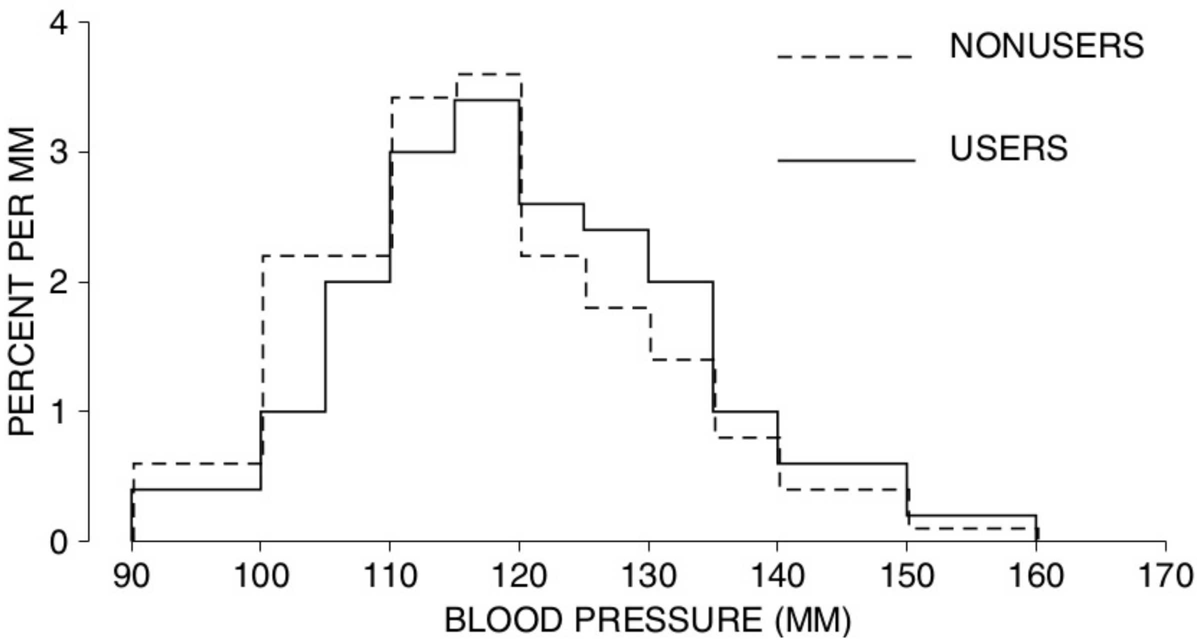


MODA
MEDIANA
M



CODE

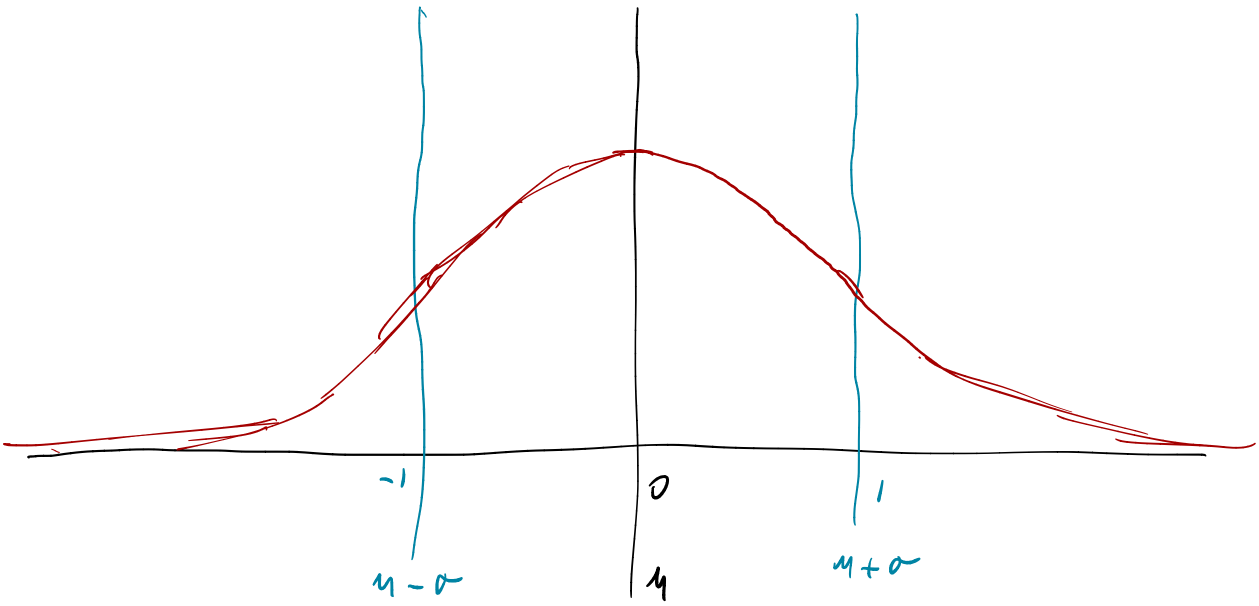


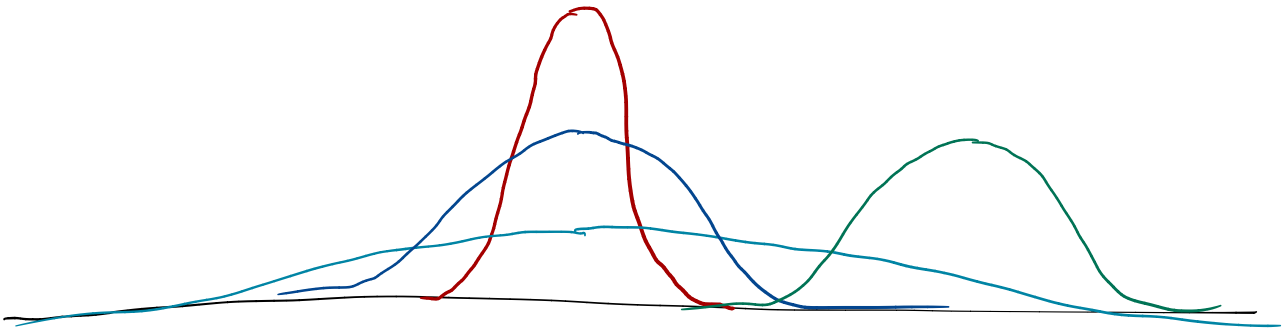


NONUSERS
USERS
PERCENT PER MM
0
1
2
3
4
90
100
110
120
130
140
150
160
170
BLOOD PRESSURE (MM)

Distribuzione normale

$N(\mu, \sigma)$ $\quad$ $N(0, 1)$

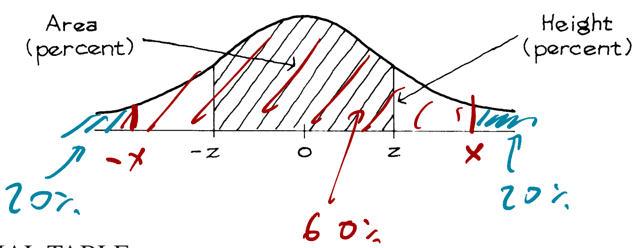




Tables (da Freeman, Pisani, Purves – Statistics)

$\mu = 0$

$\sigma = 1$



A NORMAL TABLE

z	*Height*	*Area*	*z*	*Height*	*Area*	*z*	*Height*	*Area*
0.00	39.89	0	1.50	12.95	86.64	3.00	0.443	99.730
0.05	39.84	3.99	1.55	12.00	87.89	3.05	0.381	99.771
0.10	39.69	7.97	1.60	11.09	89.04	3.10	0.327	99.806
0.15	39.45	11.92	1.65	10.23	90.11	3.15	0.279	99.837
0.20	39.10	15.85	1.70	9.40	91.09	3.20	0.238	99.863
0.25	38.67	19.74	1.75	8.63	91.99	3.25	0.203	99.885
0.30	38.14	23.58	1.80	7.90	92.81	3.30	0.172	99.903
0.35	37.52	27.37	1.85	7.21	93.57	3.35	0.146	99.919
0.40	36.83	31.08	1.90	6.56	94.26	3.40	0.123	99.933
0.45	36.05	34.73	1.95	5.96	94.88	3.45	0.104	99.944
0.50	35.21	38.29	2.00	5.40	95.45	3.50	0.087	99.953
0.55	34.29	41.77	2.05	4.88	95.96	3.55	0.073	99.961
0.60	33.32	45.15	2.10	4.40	96.43	3.60	0.061	99.968
0.65	32.30	48.43	2.15	3.96	96.84	3.65	0.051	99.974
0.70	31.23	51.61	2.20	3.55	97.22	3.70	0.042	99.978
0.75	30.11	54.67	2.25	3.17	97.56	3.75	0.035	99.982
0.80	28.97	57.63	2.30	2.83	97.86	3.80	0.029	99.986
0.85	27.80	60.47	2.35	2.52	98.12	3.85	0.024	99.988
0.90	26.61	63.19	2.40	2.24	98.36	3.90	0.020	99.990
0.95	25.41	65.79	2.45	1.98	98.57	3.95	0.016	99.992
1.00	24.20	68.27	2.50	1.75	98.76	4.00	0.013	99.9937
1.05	22.99	70.63	2.55	1.54	98.92	4.05	0.011	99.9949
1.10	21.79	72.87	2.60	1.36	99.07	4.10	0.009	99.9959
1.15	20.59	74.99	2.65	1.19	99.20	4.15	0.007	99.9967
1.20	19.42	76.99	2.70	1.04	99.31	4.20	0.006	99.9973
1.25	18.26	78.87	2.75	0.91	99.40	4.25	0.005	99.9979
1.30	17.14	80.64	2.80	0.79	99.49	4.30	0.004	99.9983
1.35	16.04	82.30	2.85	9.69	99.56	4.35	0.003	99.9986
1.40	14.97	83.85	2.90	0.60	99.63	4.40	0.002	99.9989
1.45	13.94	85.29	2.95	0.51	99.68	4.45	0.002	99.9991

Esercizio F

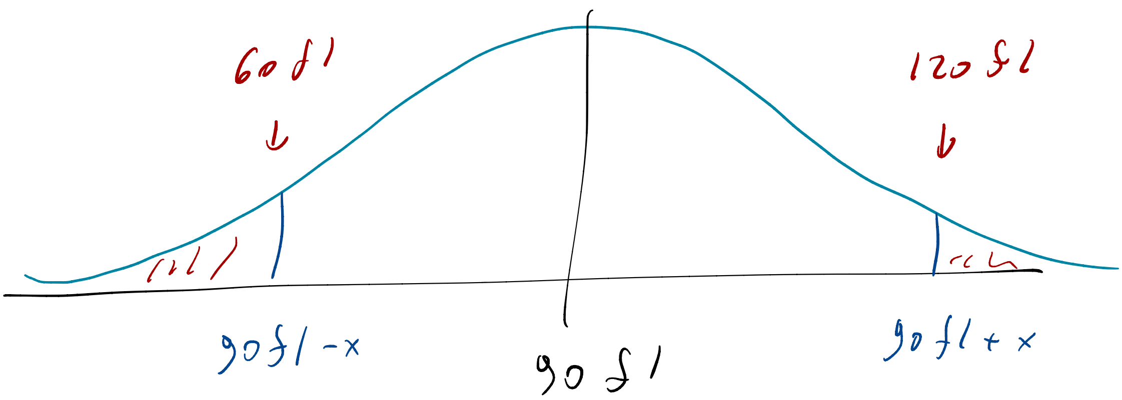
Supponiamo che i volumi dei globuli rossi di un paziente siano distribuiti in maniera aprossimativamente gaussiana. Il volume medio di un globulo rosso è di 90 femtolitri, e il 20% dei globuli rossi è più grande di 100 femtolitri. Quanto vale la deviazione standard della distribuzione dei volumi? Ha senso esprimere questa quantità come percentuale del volume medio? È ragionevole che alcuni dei globuli rossi di questo paziente abbiano più del doppio del volume di altri? Quanto vale il volume mediano dei globuli rossi più grandi di 100 femtolitri?

"100 fl è l'80-esimo percentile della distr."

$$100\,fl = \underbrace{\mu}_{90\,fl} + 0.85\,\sigma$$

$$\Downarrow$$

$$\sigma = \frac{100\,fl - 90\,fl}{0.85} \approx 11.8\,fl$$



$$90\,fl + x = 2\,(90\,fl - x)$$

$$x = 30\,fl$$