

Microsoft Excel - Vezba 1.1 objasnjenje

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startmatlab putmatrix getmatrix evalstring

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### Vezba broj 1.1

#### Analiza grešaka u merenju

Upisati potrebne lične podatke

Student: \_\_\_\_\_  
 Broj indeksa: \_\_\_\_\_  
 Datum: \_\_\_\_\_

Upisati rezultate merenja

| REZULTATI MERENJA |         | GREŠKE MERENJA   |                  |                  |                  |
|-------------------|---------|------------------|------------------|------------------|------------------|
| Redni broj        | t (sec) | $\delta p_{rel}$ | $\delta p_{abs}$ | $\delta p_{rel}$ | $\delta p_{abs}$ |
| 1                 | 5.00    | 0.00             | 0.01             | 0.05             | 0.06             |
| 2                 | 4.85    | 0.15             | 0.03             | 0.08             | 0.03             |
| 3                 | 5.26    | 0.26             | 0.06             | 0.00             | 0.11             |
| 4                 | 5.05    | 0.05             | 0.01             | 0.04             | 0.07             |
| 5                 | 4.89    | 0.11             | 0.02             | 0.07             | 0.03             |
| 6                 | 5.11    | 0.11             | 0.03             | 0.03             | 0.08             |
| 7                 | 5.07    | 0.07             | 0.02             | 0.04             | 0.07             |
| 8                 | 4.98    | 0.02             | 0.00             | 0.05             | 0.05             |
| 9                 | 5.00    | 0.00             | 0.00             | 0.05             | 0.06             |
| 10                | 4.96    | 0.04             | 0.00             | 0.06             | 0.05             |
| 11                | 4.98    | 0.02             | 0.00             | 0.05             | 0.05             |
| 12                | 5.26    | 0.26             | 0.06             | 0.00             | 0.11             |
| 13                | 5.22    | 0.22             | 0.05             | 0.01             | 0.10             |
| 14                | 5.21    | 0.21             | 0.05             | 0.01             | 0.10             |
| 15                | 4.86    | 0.14             | 0.02             | 0.08             | 0.03             |
| 16                | 4.91    | 0.09             | 0.01             | 0.07             | 0.04             |
| 17                | 4.83    | 0.17             | 0.03             | 0.08             | 0.02             |
| 18                | 5.20    | 0.20             | 0.04             | 0.01             | 0.10             |
| 19                | 5.06    | 0.06             | 0.02             | 0.04             | 0.07             |
| 20                | 4.89    | 0.11             | 0.02             | 0.07             | 0.03             |
| 21                | 4.93    | 0.07             | 0.01             | 0.06             | 0.04             |
| 22                | 5.04    | 0.04             | 0.01             | 0.04             | 0.07             |
| 23                | 4.77    | 0.23             | 0.04             | 0.09             | 0.01             |
| 24                | 4.99    | 0.01             | 0.00             | 0.05             | 0.05             |
| 25                | 4.92    | 0.08             | 0.01             | 0.06             | 0.04             |
| 26                | 5.03    | 0.03             | 0.01             | 0.04             | 0.06             |
| 27                | 4.96    | 0.04             | 0.00             | 0.06             | 0.05             |
| 28                | 5.06    | 0.06             | 0.02             | 0.04             | 0.07             |
| 29                | 4.81    | 0.19             | 0.03             | 0.09             | 0.02             |
| 30                | 4.73    | 0.27             | 0.05             | 0.10             | 0.00             |

OBRADA REZULTATA MERENJA

|  |       |     |
|--|-------|-----|
| srednja vrednost ( $\bar{x}$ )                                 | 4.98  | sec |
| standardno odstupanje ( $\sigma$ )                             | 0.13  | sec |
| maksimalna vrednost ( $x_{max}$ )                              | 5.26  | sec |
| minimalna vrednost ( $x_{min}$ )                               | 4.73  | sec |
| Broj podataka (N)  | 50.00 |     |
| standardno odstupanje srednje vrednosti ( $\sigma_{\bar{x}}$ ) | 0.02  | sec |

EMPIRISKA (f<sub>e</sub>) I TEORIJSKA (f<sub>t</sub>) FUNKCIJA RASPODELE

|                             |      |
|-----------------------------|------|
| preporučeni broj klasa      | 8.49 |
| usvojeni broj klasa         | 10   |
| širina klase ( $\Delta x$ ) | 0.05 |

Određivanje donje i gornje granice intervala klasa ( $x_{i-1} \dots x_i$ )

|                             | računato | usvojeno |
|-----------------------------|----------|----------|
| donja granica (DG)          | 4.71     | 4.70     |
| gornja granica (GG)         | 5.24     | 5.25     |
| određivanje broja klasa (K) |          | 11       |

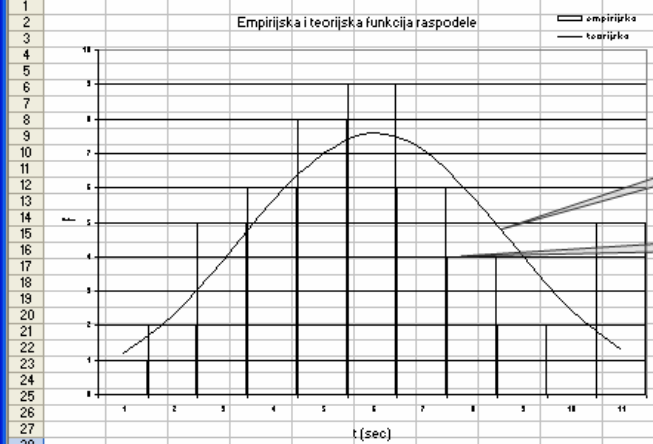
| Klasa | DG   | GG   | interval | f <sub>e</sub> | sred.intervala | f <sub>t</sub> |
|-------|------|------|----------|----------------|----------------|----------------|
| 1     | 4.70 | 4.75 | 4.7-4.75 | 1              | 4.725          | 1.16           |
| 2     | 4.75 | 4.80 | 4.75-4.8 | 2              | 4.775          | 2.31           |
| 3     | 4.80 | 4.85 | 4.8-4.85 | 5              | 4.825          | 3.87           |
| 4     | 4.85 | 4.90 | 4.85-4.9 | 6              | 4.875          | 5.60           |
| 5     | 4.90 | 4.95 | 4.9-4.95 | 8              | 4.925          | 7.02           |
| 6     | 4.95 | 5.00 | 4.95-5   | 9              | 4.975          | 7.60           |
| 7     | 5.00 | 5.05 | 5-5.05   | 6              | 5.025          | 7.12           |
| 8     | 5.05 | 5.10 | 5.05-5.1 | 4              | 5.075          | 5.77           |
| 9     | 5.10 | 5.15 | 5.1-5.15 | 2              | 5.125          | 4.04           |
| 10    | 5.15 | 5.20 | 5.15-5.2 | 0              | 5.175          | 2.45           |
| 11    | 5.20 | 5.25 | 5.2-5.25 | 5              | 5.225          | 1.28           |

Formulae and calculations shown in the image:

- $=ABS(D17-5)$
- $=ABS(D17-\$N\$6)/\$N\$6$
- $=ABS(D17-\$N\$8)/\$N\$8$
- $=ABS(D17-\$N\$9)/\$N\$9$
- $=AVERAGE(D17:D66)$
- $=STDEV(D17:D66)$
- $=MAX(D17:D66)$
- $=MIN(D17:D66)$
- $=COUNT(C17:C66)$
- $=N7/SQRT(N10)$
- $=5*LOG(50)$
- $=N6-2*N7$
- $=N6+2*N7$
- $=(O24-O23)/N18$
- $=(N28-M28)/2-M28$
- $=NORMDIST(Q28,\$N\$6,\$N\$7,TRUE)*50*\$N\$18$
- $=M28-\$N\$18$
- $=FREQUENCY(D17:D66,N28:N38)$

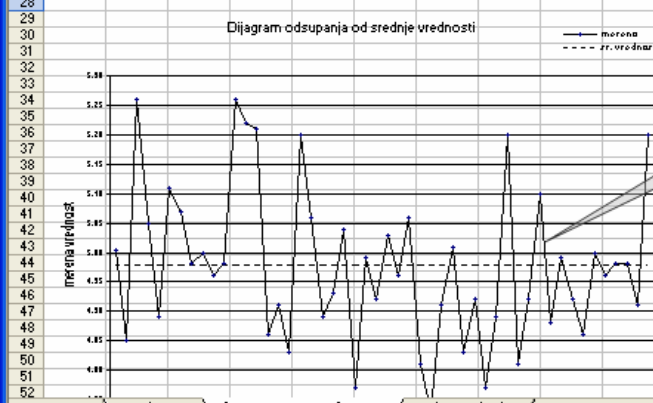
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=SERIES("teorijska",vezba1.1!\$M\$28:\$M\$38,1)

=SERIES("empirijska",vezba1.1!\$L\$28:\$L\$38,vezba1.1!\$K\$28:\$K\$38,2)



=SERIES("mereno",vezba1.1!\$C\$17:\$C\$66,vezba1.1!\$D\$17:\$D\$66,1)

vezba1.1 dijagram\_vezba1.1 radna tabela