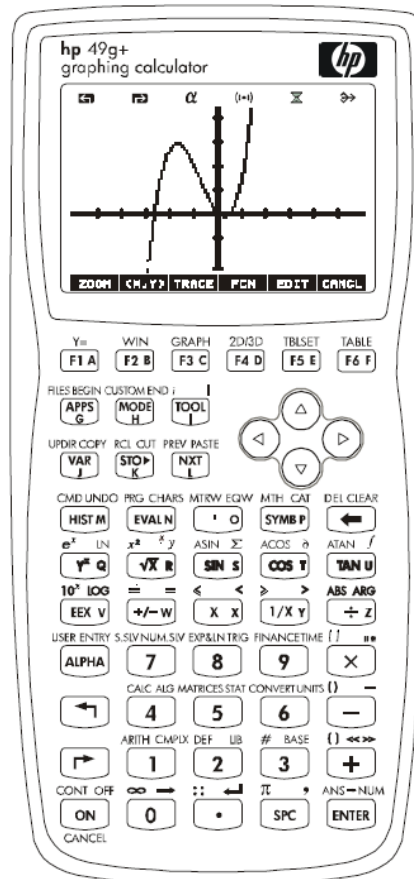


DPROB (version 1.0) for the HP-49g calculator.



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Library DPROB (version 1.0 2006).



1. - Introduction.




DPROB.ZIP has DPROB.hp , Guía_esp.pdf, Guide_eng.pdf files. The library goal is to be a handy learning tool for basic statistics and probability functions.

2. - Requirements.

The library was written in UserRpl, therefore the calculator must be set up in RPN mode (flag 95 off). It's recommended to use soft menus (flag 117 on) and the approximate mode (flag 105 on). For the Weibull, Log-Normal, Beta and Gamma accumulated functions it's used the INTVX command so it is recommended to fix the calculator to 4 to 6 decimals. If the standard mode is used a 14 decimal approximation result will be calculated, thus the evaluation time will be intolerably long.

3. - Installation.

Unzip the files, then you have to use the connectivity kit in order to send the file DPROB to the calculator; after this action, you should see the file in the calculator "home" directory. Move the file to the port 0, 1 or 2 then restart the calculator with  + .

There's another way to "attach" the file to the desired port: you can send the file contents to the stack, then you can store the file in the ports 0, 1, 2 using the key  and restarting the calculator with  + . In order to save memory it is recommended to erase the file DPROB in the home directory.

4. - Contents.

The library has the programs that you can see in the fig 1:



Fig 1

The operation is very easy, because the only thing to do is to feed the program with the required data in order to get the proper answer. For example if we decide to calculate the hypergeometric distribution we press the key **Dprob** and we get the menu shown in the fig 2:

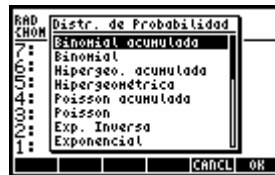


Fig 2


Using the arrow  it is possible to find the desired function and we press OK. We get a new menu (fig3):




Fig 3

Example: in a 50 battery lot there are 15 defectives; then, if it is taken a sample of 8 batteries. Which is the probability to find exactly 3 defectives batteries? After the data feeding the dial will show something like this (fig 4):



Fig 4

After pressing  we get the desired answer (fig 5):

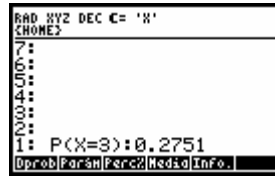


Fig 5

4.1 Dprob Functions.

:

1. Accumulated Binomial. Data: Sample size “n” (0,∞), success sample probability p [0, 1], and success sample probability [0, n].
2. Binomial. Data: Simple size “n” (0,∞), success probability p [0, 1] and success sample probability [0, n].
3. Accumulated Hypergeometric. Data: Simple size “n” (0,∞), population size N (0,∞), population success [0, N] and sample success [0, n].
4. Hypergeometric. Data: Simple size “n” (0,∞), population size N (0,∞), population success [0, N] and sample success [0, n].
5. Accumulated Poisson: Data: parameter λ (expected number of occurrences that occur during the given interval). (0,∞) and sample success [0, n].
6. Poisson. Data: parameter λ (expected number of occurrences that occur during the given interval) (0,∞) and sample success [0, n].
7. Inverse accumulated exponential function: Data: Parameter β ($\beta=1/\lambda$) (0,∞) and probability p [0, 1].
8. Accumulated exponential function: Data: parameter β (0,∞) and x value (0,∞).
9. Accumulated standard normal distribution. Data: mean $(-\infty, \infty)$, Standard deviation (0, ∞) and x value $(-\infty, \infty)$.
10. Accumulated Student's t-distribution. Data: degrees of freedom ν (0,∞) and t value $(-\infty, \infty)$.
11. Accumulated Chi-square distribution. Data: degrees of freedom ν (0,∞) and x value [0,∞).

12. Accumulated F-distribution. Data: degrees of freedom ($v_{\text{numerator}}, v_{\text{denominator}}$) $(0, \infty)$ and x value $[0, \infty)$.
13. Accumulated Weibull. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.
14. Weibull. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.
15. Accumulated Log-Normal. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.
16. Log-Normal. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.
17. Accumulated Beta. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, 1)$.
18. Beta. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, 1)$.
19. Accumulated Gamma. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.
20. Gamma. Data: parameters α $(0, \infty)$, β $(0, \infty)$, and x value $(0, \infty)$.

4.2 *Parámetros* functions.

The goal is to calculate the mean (μ) and standard deviation (σ) of the next functions:

1. Binomial. Data: Simple size “n” $(0, \infty)$ and success probability p $[0, 1]$.
2. Hypergeometric. Data: Simple size “n” $(0, \infty)$, population size N $(0, \infty)$ and population success $[0, N]$.
3. Poisson. Data: parameter λ $(0, \infty)$.
4. Exponential: Data: Parameter β ($\beta=1/\lambda$) $(0, \infty)$.
5. Weibull. Data: parameters α $(0, \infty)$ and β $(0, \infty)$.
6. Log-Normal. Data: parameters α $(0, \infty)$ and β $(0, \infty)$.
7. Beta. Data: parameters α $(0, \infty)$ and β $(0, \infty)$.
8. Gamma. Data: parameters α $(0, \infty)$ and β $(0, \infty)$.

4.3 Perc% and Mediana Applications.

Perc% and Mediana are used to compute the percentiles and median of statistical data series. It is necessary to form the data vector ΣDAT with $n \times 1$ size.

If ΣDAT is not given the calculator will send an error message (fig 6).

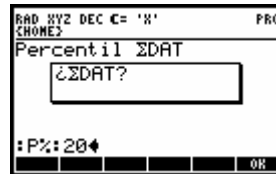


Fig 6

If ΣDAT has a $n \times m$ size and $m > 1$ we get the next error message (fig 7).

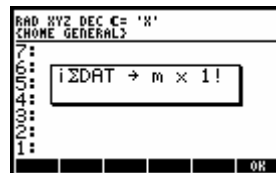


Fig 7

5. - References.

The next books were used for the program construction:

- Miller, Freund & Johnson, "Probability and statistics for engineers". Prentice-Hall Inc, 4th edition. Prentice-Hal Hispanoamericana 1st edition in Spanish language, Mexico, 1992.
- Berenson, Levine, Krehbiel, "Business statistics: a first course", Prentice-Hall 2nd edition 2000. Pearson Educación, 2nd edition in Spanish language, Mexico, 2001.

6. - Contact.

If you need further information about this library you can send an e-mail to orivera_mail-hp48@yahoo.com.mx.

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