# HFCPDF

## PURPOSE

Compute the standard half-Cauchy probability density function.

## DESCRIPTION

The standard half-Cauchy distribution is the distribution of ABS(x) when x has a standard Cauchy distribution. The probability density function for the standard half-Cauchy distribution is:

$$f(x) = \frac{2}{\pi(1 + x^2)} \qquad x \geq 0 \qquad \textbf{(EQ 8-193)}$$

## SYNTAX

LET <y> = HFCPDF(<x>) <SUBSET/EXCEPT/FOR qualification>

where <x> is a non-negative variable, number, or parameter;

<y> is a variable or a parameter (depending on what <x> is) where the computed Cauchy pdf value is stored;

and where the <SUBSET/EXCEPT/FOR qualification> is optional.

## EXAMPLES

LET A = HFCPDF(3)

LET X2 = HFCPDF(X1)

## NOTE

The general form of the half-Cauchy pdf is:

$$f(x) = \left(\frac{1}{s}\right)\frac{2}{\pi\left(1 + \left(\frac{x - t}{s}\right)^2\right)} \qquad x \geq \mu \qquad \textbf{(EQ 8-194)}$$

where $\mu$ is a location parameter and $\sigma$ is a scale parameter.

## DEFAULT

None

## SYNONYMS

None

## RELATED COMMANDS

| | | |
|---|---|---|
| HFCCDF | = | Compute the Cauchy cumulative distribution function. |
| HFCPPF | = | Compute the Cauchy percent point function. |
| CAUCDF | = | Compute the Cauchy cumulative distribution function. |
| CAUPDF | = | Compute the Cauchy probability density function. |
| CAUPPF | = | Compute the Cauchy percent point function. |
| NORCDF | = | Compute the normal cumulative distribution function. |
| NORPDF | = | Compute the normal probability density function. |
| NORPPF | = | Compute the normal percent point function. |
| HFNCDF | = | Compute the half-normal cumulative distribution function. |
| HFNPDF | = | Compute the half-normal probability density function. |
| HFNPPF | = | Compute the half-normal percent point function. |

## REFERENCE

"Continuous Univariate Distributions - Vol. I," 2nd. ed., Johnson, Kotz, and Balakrishnan, Wiley and Sons, 1994 (page 328).

## APPLICATIONS

Data Analysis

## IMPLEMENTATION DATE

95/10

PROGRAM

```
TITLE AUTOMATIC
PLOT HFCPDF(X) FOR X = 0 0.01 10
```