NAME

spline − interpolate smooth curve

SYNOPSIS

spline [option] ...

DESCRIPTION

Spline takes pairs of numbers from the standard input as abscissas and ordinates of a function. It produces a similar set, which is approximately equally spaced and includes the input set, on the standard output. The cubic spline output (R. W. Hamming, *Numerical Methods for Scientists and Engineers,* 2nd ed., 349ff) has two continuous derivatives, and sufficiently many points to look smooth when plotted, for example by *graph*(1G).

The following options are recognized, each as a separate argument.

−a Supply abscissas automatically (they are missing from the input); spacing is given by the next argument, or is assumed to be 1 if next argument is not a number.

−k The constant k used in the boundary value computation

$$y_0'' = ky_1'', \quad y_n'' = ky_{n-1}''$$

is set by the next argument. By default $k = 0$.

−n Space output points so that approximately n intervals occur between the lower and upper x limits. (Default $n = 100$.)

−p Make output periodic, i.e. match derivatives at ends. First and last input values should normally agree.

−x Next 1 (or 2) arguments are lower (and upper) x limits. Normally these limits are calculated from the data. Automatic abcissas start at lower limit (default 0).

SEE ALSO

graph(1G)

DIAGNOSTICS

When data is not strictly monotone in x, *spline* reproduces the input without interpolating extra points.

BUGS

A limit of 1000 input points is enforced silently.