**NAME**

spline − interpolate smooth curve

**SYNOPSIS**

**spline** [ option ] ...

**DESCRIPTION**

*Spline* takes pairs of numbers from the standard input as abcissas 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 *plot*(I).

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 next argument is used as 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 $n$ points occur between the lower and upper $x$ limits, where $n$ is the next argument. (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 the lower limit (default 0).

**SEE ALSO**

plot(I)

**BUGS**

A limit of 1000 input points is enforced silently.