[3.22] Create lists with logarithmic element spacing

Lists with logarithmic element spacing are useful for creating function plots with logarithmic x-axis scaling, and for making tables of functions which change rapidly for small values of the indpendent variable, but less rapidly for larger values. This program creates such a list.

```
loglist(l,h,n)
Func
©(xl,xh,n) make list of n+1 elements from xl to xh with log-spacing
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local l1,d

log(l)→l1
(log(h)-l1)/n→d

seq(10^(l1+k*d),k,0,n)

EndFunc
```

loglist() creates a list of n+1 elements which range from *l* to *h*. For example, if l = 20, h = 20,000 and n = 10, then the returned list is

{20, 39.91, 79.62, 158.87, 316.99, 632.46, 1261.9, 2517.9, 5023.8, 10023.7, 20000}

Note that the difference between the first two elements is about 20, and the difference between the last two elements is about 10,000. This is the desired effect of logarithmic spacing.

The function works by logarithmically mapping the original interval [l,h] onto the interval of [log(l), log(h)].

To make a logarithmic plot of some function f(x), use *loglist()* to make a list of elements over the required range of *x*, and save it as variable *list1*. Next, use

```
seq(k,k,0,n)→xlist
f(list1)→ylist
```

to make lists of x-coordinate plot values and function values, respectively. Finally, set up a data plot (not a function plot) in the Y= Editor, using *xlist* and *ylist* as the variables to plot.