Home / Special Function / Bessel function

Calculates the positive zeros of the Bessel functions $J_v(x)$ and $Y_v(x)$.
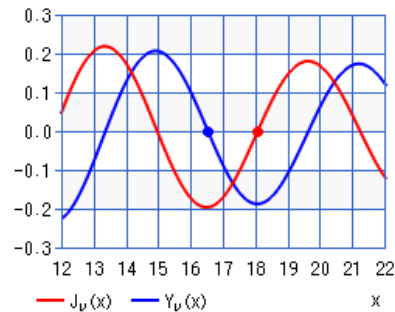
order v	0	v≤200
ordinal number s	6	of zeros (s=1,2,..)

Execute	Clear	Store/Read	Print	22digit ✔

Bessel function (zeros)	result
● s-th zeros of $J_v(x)$	18.07106396791092254315
● s-th zeros of $Y_v(x)$	16.50092244152809075342

Bessel functions of
the 1st kind $J_\nu(x)$ and 2nd kind $Y_\nu(x)$

$(1)\ x^2 y'' + xy' + (x^2 - \nu^2)y = 0$

$\quad y = c_1 J_\nu(x) + c_2 Y_\nu(x)$

$(2)\ J_\nu(x) = \sum_{k=0}^{\infty} \dfrac{(-1)^k}{k!\,\Gamma(k+\nu+1)} \left(\dfrac{x}{2}\right)^{\nu+2k}$

$\quad Y_\nu(x) = \dfrac{J_\nu(x)\cos(\nu\pi) - J_{-\nu}(x)}{\sin(\nu\pi)}$

$(3)\ e^{\frac{x}{2}\left(t - \frac{1}{t}\right)} = \sum_{n=-\infty}^{\infty} J_n(x)t^n, \quad n = integer$