```
Loading image file: D:\Program Files\Reduce\lib\psl\red\reduce.img
Reduce (Free PSL version, revision 5368), 24-Jun-2020 ...

1: in "C:\Users\franc\IdeaProjects\Run-REDUCE-FX\test\symbols_and_functions.tst";
% Symbolic constants:
{infinity, pi, Euler_gamma, golden_ratio};
```

$$\left\{\infty\,,\,\pi\,,\,\gamma\,,\,\frac{\sqrt{5}+1}{2}\right\}$$

```
% Greek letters:
{alpha, beta, gamma, delta, epsilon, zeta, eta, theta, iota, kappa, lambda, mu};
```

$$\{\alpha\,,\,\beta\,,\,\gamma\,,\,\delta\,,\,\epsilon\,,\,\zeta\,,\,\eta\,,\,\theta\,,\,\iota\,,\,\kappa\,,\,\lambda\,,\,\mu\}$$

```
{nu, xi, omicron, pi, rho, sigma, tau, upsilon, phi, chi, psi, omega};
```

$$\{\nu\,,\,\xi\,,\,o\,,\,\pi\,,\,\rho\,,\,\sigma\,,\,\tau\,,\,\upsilon\,,\,\phi\,,\,\chi\,,\,\psi\,,\,\omega\}$$

```
{!Alpha, !Beta, !Gamma, !Delta, !Epsilon, !Zeta, !Eta, !Theta, !Iota, !Kappa, !Lambda, !Mu};
```

$$\{\mathrm{A}\,,\,\mathrm{B}\,,\,\Gamma\,,\,\Delta\,,\,\mathrm{E}\,,\,\mathrm{Z}\,,\,\mathrm{H}\,,\,\Theta\,,\,\mathrm{I}\,,\,\mathrm{K}\,,\,\Lambda\,,\,\mathrm{M}\}$$

```
{!Nu, !Xi, !Omicron, !Pi, !Rho, !Sigma, !Tau, !Upsilon, !Phi, !Chi, !Psi, !Omega};
```

$$\{\mathrm{N}\,,\,\Xi\,,\,\mathrm{O}\,,\,\Pi\,,\,\mathrm{P}\,,\,\Sigma\,,\,\mathrm{T}\,,\,\Upsilon\,,\,\Phi\,,\,\mathrm{X}\,,\,\Psi\,,\,\Omega\}$$

```
% Elementary transcendental functions:
{exp(x), log(x), log10(x), logb(x, b), sqrt(x), factorial(x)};
```

$$\left\{e^{x}\,,\,\log\left(x\right)\,,\,\log_{10}\left(x\right)\,,\,\log_{b}\left(x\right)\,,\,\sqrt{x}\,,\,x!\right\}$$

```
{sin(x), cos(x), tan(x), csc(x), sec(x), cot(x)};
```

$$\{\sin\left(x\right)\,,\,\cos\left(x\right)\,,\,\tan\left(x\right)\,,\,\csc\left(x\right)\,,\,\sec\left(x\right)\,,\,\cot\left(x\right)\}$$

```
{sinh(x), cosh(x), tanh(x), csch(x), sech(x), coth(x)};
```

$$\{\sinh\left(x\right)\,,\,\cosh\left(x\right)\,,\,\tanh\left(x\right)\,,\,\mathrm{csch}\left(x\right)\,,\,\mathrm{sech}\left(x\right)\,,\,\coth\left(x\right)\}$$

```
{asin(x), acos(x), atan(x), acsc(x), asec(x), acot(x)};
```

$$\{\arcsin\left(x\right)\,,\,\arccos\left(x\right)\,,\,\arctan\left(x\right)\,,\,\mathrm{arccsc}\left(x\right)\,,\,\mathrm{arcsec}\left(x\right)\,,\,\mathrm{arccot}\left(x\right)\}$$

```
{asinh(x), acosh(x), atanh(x), acsch(x), asech(x), acoth(x)};
```

$$\{\mathrm{arcsinh}\left(x\right)\,,\,\mathrm{arccosh}\left(x\right)\,,\,\mathrm{arctanh}\left(x\right)\,,\,\mathrm{arccsch}\left(x\right)\,,\,\mathrm{arcsech}\left(x\right)\,,\,\mathrm{arccoth}\left(x\right)\}$$

```
% Gamma, Beta and related functions:
{Gamma(z), Beta(a, b), psi(z), polygamma(n, z), iGamma(a, z), iBeta(a, b, x), dilog(z),
   Pochhammer(a, n), binomial(m, n), zeta(s)};
```

$$\left\{\Gamma\left(z\right)\,,\,\frac{\Gamma\left(a\right)\,\Gamma\left(b\right)}{\Gamma\left(a+b\right)}\,,\,\psi\left(z\right)\,,\,\psi^{(n)}\left(z\right)\,,\,P\left(a,z\right)\,,\,I_{x}\left(a,b\right)\,,\,\mathrm{Li}_{2}\left(z\right)\,,\,\left(a\right)_{n}\,,\,\binom{m}{n}\,,\,\zeta\left(s\right)\right\}$$

```
load_package specfn;


% Integral functions:
{Ei(x), li(x), Si(z), Ci(z), Shi(z), Chi(z), erf(z), erfc(z), Fresnel_S(z), Fresnel_C(z)};
```

$$\left\{\mathrm{Ei}\left(x\right)\,,\,\mathrm{Ei}\left(\log\left(x\right)\right)\,,\,\mathrm{Si}\left(z\right)\,,\,\mathrm{Ci}\left(z\right)\,,\,\mathrm{Shi}\left(z\right)\,,\,\mathrm{Chi}\left(z\right)\,,\,\mathrm{erf}\left(z\right)\,,\,-\mathrm{erf}\left(z\right)+1\,,\,\mathrm{S}\left(z\right)\,,\,\mathrm{C}\left(z\right)\right\}$$

```
% Airy, Bessel and related functions:
{Airy_Ai(z), Airy_Bi(z), Airy_AiPrime(z), Airy_BiPrime(z), BesselJ(nu, z), BesselY(nu, z),
   BesselI(nu, z), BesselK(nu, z), Hankel1(nu, z), Hankel2(nu, z)};
```

$$\left\{\mathrm{Ai}\left(z\right)\,,\,\mathrm{Bi}\left(z\right)\,,\,\mathrm{Ai}'\left(z\right)\,,\,\mathrm{Bi}'\left(z\right)\,,\,J_{\nu}\left(z\right)\,,\,Y_{\nu}\left(z\right)\,,\,I_{\nu}\left(z\right)\,,\,K_{\nu}\left(z\right)\,,\,H_{\nu}^{(1)}\left(z\right)\,,\,H_{\nu}^{(2)}\left(z\right)\right\}$$

```
% Struve, Lommel, Kummer, Whittaker and spherical harmonic functions:
{StruveH(nu, z), StruveL(nu, z), Lommel1(mu, nu, z), Lommel2(mu, nu, z),
   KummerM(a, b, z), KummerU(a, b, z), WhittakerM(kappa, mu, z), WhittakerW(kappa, mu, z),
   SphericalHarmonicY(3, 2, theta, phi), SolidHarmonicY(3, 2, x, y, z, r2)};
```

$$\left\{\mathbf{H}_{\nu}\left(z\right)\,,\,\mathbf{L}_{\nu}\left(z\right)\,,\,s_{\mu,\nu}\left(z\right)\,,\,S_{\mu,\nu}\left(z\right)\,,\,M\left(a,b,z\right)\,,\,U\left(a,b,z\right)\,,\,\frac{z^{\frac{2\,\mu+1}{2}}\,M\left(\frac{-2\,\kappa+2\,\mu+1}{2},2\,\mu+1,z\right)}{e^{\frac{z}{2}}}\,,\right.$$

$$\frac{z^{\frac{2\,\mu+1}{2}}\,U\left(\frac{-2\,\kappa+2\,\mu+1}{2},2\,\mu+1,z\right)}{e^{\frac{z}{2}}}\,,\,\frac{\sqrt{105}\,\cos\left(\theta\right)\,\sin\left(\theta\right)^{2}\,\left(\cos\left(\phi\right)^{2}+2\,\cos\left(\phi\right)\,\sin\left(\phi\right)\,i-\sin\left(\phi\right)^{2}\right)}{4\,\sqrt{\pi}\,\sqrt{2}}\,,$$

$$\left.\frac{\sqrt{105}\,z\,\left(2\,i\,x\,y+x^{2}-y^{2}\right)}{4\,\sqrt{\pi}\,\sqrt{2}}\right\}$$

```
% Classical orthogonal polynomials:
{JacobiP(n, alpha, beta, x), GegenbauerP(n, lambda, x), ChebyshevT(n, x), ChebyshevU(n, x),
   LegendreP(n, x), LegendreP(n, m, x), LaguerreP(n, x), LaguerreP(n, alpha, x), HermiteP(n, x)};
```

$$\left\{P_{n}^{(\alpha,\beta)}\left(x\right)\,,\,C_{n}^{(\lambda)}\left(x\right)\,,\,T_{n}\left(x\right)\,,\,U_{n}\left(x\right)\,,\,P_{n}\left(x\right)\,,\,P_{n}^{(m)}\left(x\right)\,,\,L_{n}\left(x\right)\,,\,L_{n}^{(\alpha)}\left(x\right)\,,\,H_{n}\left(x\right)\right\}$$

```
;

end;
```

2: