$$filename := \text{"C:/LatexOutput/Chi.tex"}$$

$$\frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}$$

"i is", 1,
" --"

$$g := t \to t^2$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{4}\,\frac{\mathrm{e}^{-\frac{1}{2}\sqrt{y\sim}}\sqrt{2}}{y\sim^{1/4}\sqrt{\pi}}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, x^2, \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{4}\,\frac{\mathrm{e}^{-\frac{1}{2}\sqrt{x}}\sqrt{2}}{x^{1/4}\sqrt{\pi}}$$

$$\text{"F(x)"}, \frac{\mathrm{erf}\left(\frac{1}{2}x^{1/4}\sqrt{2}\right)\sqrt{\pi} - x^{1/4}\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\sqrt{x}}}{\sqrt{\pi}}$$

"IDF(x)", [[ ], [0, 1], ["Continuous", "IDF"]]

$$\text{"S(x)"}, -\frac{-x^{1/4}\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\sqrt{x}} + \mathrm{erf}\left(\frac{1}{2}x^{1/4}\sqrt{2}\right)\sqrt{\pi} - \sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{1}{4}\,\frac{\mathrm{e}^{-\frac{1}{2}\sqrt{x}}\sqrt{2}}{x^{1/4}\left(-x^{1/4}\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\sqrt{x}} + \mathrm{erf}\left(\frac{1}{2}x^{1/4}\sqrt{2}\right)\sqrt{\pi} - \sqrt{\pi}\right)}$$

"mean and variance", 15, 720

$$\text{"MF"}, \frac{1}{4}\,\frac{\sqrt{2}\left(\frac{8\sqrt{2}\,\Gamma\left(2r\sim+\frac{1}{2}\right)r\sim}{\left(\left(\frac{1}{2}\right)^{r\sim}\right)^2} + \frac{2\sqrt{2}\,\Gamma\left(2r\sim+\frac{1}{2}\right)}{\left(\left(\frac{1}{2}\right)^{r\sim}\right)^2}\right)}{\sqrt{\pi}}$$

$$"MGF", \frac{1}{32} \frac{e^{-\frac{1}{32t}}\left(-\mathrm{BesselK}\left(\frac{1}{4}, -\frac{1}{32t}\right) + \mathrm{BesselK}\left(\frac{3}{4}, -\frac{1}{32t}\right)\right)}{(-t)^{7/4}\sqrt{\pi}\left(-\frac{1}{t}\right)^{1/4}}$$

```
1/4\,{\frac {{{\rm e}^{-1/2\,\sqrt {x}}}\sqrt {2}}{\sqrt [4]{x}
\sqrt {
\pi}}}
```

"i is", 2,

"---"

$$g := t \to \sqrt{t}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{y\sim e^{-\frac{1}{2} y\sim^2}\sqrt{2}\,|y\sim|}{\sqrt{\pi}}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \sqrt{x}, \text{"base"}, \frac{1}{2} \frac{\sqrt{x}\, e^{-\frac{1}{2} x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{x\, e^{-\frac{1}{2} x^2}\sqrt{2}\,|x|}{\sqrt{\pi}}$$

$$\text{"F(x)"}, \frac{\mathrm{erf}\left(\frac{1}{2} x\sqrt{2}\right)\sqrt{\pi} - x\sqrt{2}\, e^{-\frac{1}{2} x^2}}{\sqrt{\pi}}$$

$$\text{"IDF(x)"}, \left[\left[s \to RootOf\left(\_Z\sqrt{2}\, e^{-\frac{1}{2}\_Z^2} - \mathrm{erf}\left(\frac{1}{2}\_Z\sqrt{2}\right)\sqrt{\pi} + s\sqrt{\pi}\right)\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"}, -\frac{-x\sqrt{2}\, e^{-\frac{1}{2} x^2} + \mathrm{erf}\left(\frac{1}{2} x\sqrt{2}\right)\sqrt{\pi} - \sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{x\, e^{-\frac{1}{2} x^2}\sqrt{2}\,|x|}{-x\sqrt{2}\, e^{-\frac{1}{2} x^2} + \mathrm{erf}\left(\frac{1}{2} x\sqrt{2}\right)\sqrt{\pi} - \sqrt{\pi}}$$

$$\text{"mean and variance"}, \frac{2\sqrt{2}}{\sqrt{\pi}}, 3 - \frac{8}{\pi}$$

$$\text{"MF"}, \int_0^{\infty} \frac{x^{r\sim} x\, \mathrm{e}^{-\frac{1}{2}x^2} \sqrt{2}\, |x|}{\sqrt{\pi}}\, \mathrm{d}x$$

"MGF",

$$\frac{1}{\sqrt{\pi}} \left(t^2 \sqrt{\pi}\, \mathrm{e}^{\frac{1}{2}t^2} \operatorname{erf}\left(\frac{1}{2} t \sqrt{2}\right) + t^2 \sqrt{\pi}\, \mathrm{e}^{\frac{1}{2}t^2} + \sqrt{\pi}\, \mathrm{e}^{\frac{1}{2}t^2} \operatorname{erf}\left(\frac{1}{2} t\sqrt{2}\right) + \sqrt{\pi}\, \mathrm{e}^{\frac{1}{2}t^2} + t\sqrt{2} \right)$$

```
{\frac {x{{\rm e}^{-1/2\,{x}^{2}}}\sqrt {2} \left| x \right| }
{\sqrt {
\pi}}}
```

"i is", 3,

" --"

$$g := t \rightarrow \frac{1}{t}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2} \frac{\sqrt{\frac{1}{y\sim}}\, \mathrm{e}^{-\frac{1}{2y\sim}} \sqrt{2}}{\sqrt{\pi}\, y\sim^2} \right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}] \right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \frac{1}{x}, \text{"base"}, \frac{1}{2} \frac{\sqrt{x}\, \mathrm{e}^{-\frac{1}{2}x} \sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2} \frac{\sqrt{\frac{1}{x}}\, \mathrm{e}^{-\frac{1}{2x}} \sqrt{2}}{\sqrt{\pi}\, x^2}$$

$$\text{"F(x)"}, -\frac{\operatorname{erf}\left(\frac{1}{2} \frac{\sqrt{2}}{\sqrt{x}}\right) \sqrt{x}\sqrt{\pi} - \sqrt{x}\sqrt{\pi} - \sqrt{2}\, \mathrm{e}^{-\frac{1}{2x}}}{\sqrt{x}\sqrt{\pi}}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous"}, \text{"IDF"}]]$$

$$"S(x)",\ -\frac{-\operatorname{erf}\left(\frac{1}{2}\frac{\sqrt{2}}{\sqrt{x}}\right)\sqrt{x}\sqrt{\pi}+\sqrt{2}\,e^{-\frac{1}{2x}}}{\sqrt{x}\sqrt{\pi}}$$

$$"h(x)",\ -\frac{1}{2}\frac{\sqrt{\frac{1}{x}}\,e^{-\frac{1}{2x}}\sqrt{2}}{x^{3/2}\left(-\operatorname{erf}\left(\frac{1}{2}\frac{\sqrt{2}}{\sqrt{x}}\right)\sqrt{x}\sqrt{\pi}+\sqrt{2}\,e^{-\frac{1}{2x}}\right)}$$

"mean and variance", 1, ∞

$$"MF",\ \frac{2^{-r\sim+1}\,\Gamma\left(\frac{3}{2}-r\sim\right)}{\sqrt{\pi}}$$

$$"MGF",\ -\frac{e^{-\sqrt{-t}\sqrt{2}}\left(t\sqrt{2}-\sqrt{-t}\right)}{\sqrt{-t}}$$

```
1/2\,{\frac {\sqrt {{x}^{-1}}\sqrt {2}}{\sqrt {\pi}{x}^{2}}{{\rm
e}^{-
1/2\,{x}^{-1}}}}
```

"i is", 4,

" ---"

$$g := t \rightarrow \arctan(t)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2}\frac{\sqrt{\tan(y\sim)}\,e^{-\frac{1}{2}\tan(y\sim)}\sqrt{2}\left(1+\tan(y\sim)^2\right)}{\sqrt{\pi}}\right], \left[0, \frac{1}{2}\pi\right], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

$$"g(x)",\ \arctan(x),\ "base",\ \frac{1}{2}\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}},\ "ChiSquareRV(3)"$$

$$"f(x)",\ \frac{1}{2}\frac{\sqrt{\tan(x)}\,e^{-\frac{1}{2}\tan(x)}\sqrt{2}\left(1+\tan(x)^2\right)}{\sqrt{\pi}}$$

$$"F(x)", \begin{cases} -\dfrac{-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(x)}\,\sqrt{2}\right)+\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{\tan(x)}}{\sqrt{\pi}} & x \le \frac{1}{2}\pi \\ \dfrac{\infty\,\mathrm{I}-\Re\left(-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(x)}\,\sqrt{2}\right)+\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{\tan(x)}\right)}{\sqrt{\pi}} & \frac{1}{2}\pi < x \end{cases}$$

$$"IDF(x)", \left[\left[s \to RootOf\left(\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(\_Z)}\sqrt{\tan(\_Z)}-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(\_Z)}\,\sqrt{2}\right)\right.\right.\right.$$
$$\left.\left.\left.+s\sqrt{\pi}\right)\right], [0, 1], ["Continuous", "IDF"]\right]$$

$$"S(x)",$$
$$\begin{cases} \dfrac{\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{\tan(x)}-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(x)}\,\sqrt{2}\right)+\sqrt{\pi}}{\sqrt{\pi}} & x \le \frac{1}{2}\pi \\ -\dfrac{\infty\,\mathrm{I}-\sqrt{\pi}-\Re\left(-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(x)}\,\sqrt{2}\right)+\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{\tan(x)}\right)}{\sqrt{\pi}} & \frac{1}{2}\pi < x \end{cases}$$

$$"h(x)", \begin{cases} \dfrac{1}{2}\,\dfrac{\sqrt{\tan(x)}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{2}\,\left(1+\tan(x)^2\right)}{\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{\tan(x)}-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\tan(x)}\,\sqrt{2}\right)+\sqrt{\pi}} & x \le \frac{1}{2}\pi \\ 0 & \frac{1}{2}\pi < x \end{cases}$$

$$"mean and variance", \pi\,\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)^2+\pi\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^2$$
$$-2\cos\left(\frac{1}{2}\right)\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)\sqrt{\pi}-2\sin\left(\frac{1}{2}\right)\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)\sqrt{\pi}$$
$$-\pi\,\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)-\pi\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)+\cos\left(\frac{1}{2}\right)\sqrt{\pi}+\sin\left(\frac{1}{2}\right)\sqrt{\pi}+\frac{1}{2}\pi,$$
$$-\pi^2\,\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)^4+\frac{1}{4}\,\frac{\left(8\,\pi^{5/2}+16\,\pi^2\cos\left(\frac{1}{2}\right)\right)\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)^3}{\sqrt{\pi}}+\Bigg($$

$$-2\,\pi^2\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^2+\frac{1}{4}\,\frac{\left(8\,\pi^{5/2}+16\,\pi^2\sin\left(\frac{1}{2}\right)\right)\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)}{\sqrt{\pi}}$$

$$+\frac{1}{4}\,\frac{-8\,\pi^{5/2}-16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)^2-24\,\pi^2\cos\left(\frac{1}{2}\right)-8\,\pi^2\sin\left(\frac{1}{2}\right)}{\sqrt{\pi}}\Bigg)\,\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)^2$$

$$+\Bigg(\frac{1}{4}\,\frac{\left(8\,\pi^{5/2}+16\,\pi^2\cos\left(\frac{1}{2}\right)\right)\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^2}{\sqrt{\pi}}$$

$$+\frac{1}{4}\,\frac{1}{\sqrt{\pi}}\Bigg(\Bigg(-8\,\pi^{5/2}-32\,\pi^{3/2}\cos\left(\frac{1}{2}\right)\sin\left(\frac{1}{2}\right)-16\,\pi^2\cos\left(\frac{1}{2}\right)$$

$$-16\,\pi^2\sin\left(\frac{1}{2}\right)\Bigg)\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)\Bigg)$$

$$+\frac{1}{4}\,\frac{1}{\sqrt{\pi}}\Bigg(4\,\pi^{5/2}+16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)^2+16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)\sin\left(\frac{1}{2}\right)+16\,\pi^2\cos\left(\frac{1}{2}\right)$$

$$+8\,\pi^2\sin\left(\frac{1}{2}\right)\Bigg)\Bigg)\,\mathrm{FresnelC}\left(\frac{1}{\sqrt{\pi}}\right)-\pi^2\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^4$$

$$+\frac{1}{4}\,\frac{\left(8\,\pi^{5/2}+16\,\pi^2\sin\left(\frac{1}{2}\right)\right)\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^3}{\sqrt{\pi}}+\frac{1}{4}\,\frac{1}{\sqrt{\pi}}\Bigg(\Bigg(-8\,\pi^{5/2}$$

$$+16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)^2-8\,\pi^2\cos\left(\frac{1}{2}\right)-24\,\pi^2\sin\left(\frac{1}{2}\right)-16\,\pi^{3/2}\Bigg)\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)^2\Bigg)$$

$$+\frac{1}{4}\,\frac{1}{\sqrt{\pi}}\Bigg(\Bigg(4\,\pi^{5/2}-16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)^2+16\,\pi^{3/2}\cos\left(\frac{1}{2}\right)\sin\left(\frac{1}{2}\right)$$

$$+8\,\pi^2\cos\left(\frac{1}{2}\right)+16\,\pi^2\sin\left(\frac{1}{2}\right)+16\,\pi^{3/2}\Bigg)\,\mathrm{FresnelS}\left(\frac{1}{\sqrt{\pi}}\right)\Bigg)$$

$$+\frac{1}{4}\,\frac{-\pi^{5/2}-4\,\pi^{3/2}-8\,\pi^{3/2}\cos\left(\frac{1}{2}\right)\sin\left(\frac{1}{2}\right)-4\,\pi^2\cos\left(\frac{1}{2}\right)-4\,\pi^2\sin\left(\frac{1}{2}\right)}{\sqrt{\pi}}$$

$$+\frac{1}{2}\frac{\sqrt{2}\left(\int_0^{\frac{1}{2}\pi}\frac{x^2\,\mathrm{e}^{-\frac{1}{2}\frac{\sin(x)}{\cos(x)}}\sqrt{\sin(x)}}{\cos(x)^{5/2}}\,\mathrm{d}x\right)}{\sqrt{\pi}}$$

$$\text{"MF"},\ \int_0^{\frac{1}{2}\pi}\frac{1}{2}\frac{x^{r\sim}\sqrt{\tan(x)}\,\mathrm{e}^{-\frac{1}{2}\tan(x)}\sqrt{2}\,\left(1+\tan(x)^2\right)}{\sqrt{\pi}}\,\mathrm{d}x$$

$$\text{"MGF"},\ \frac{1}{2}\frac{\sqrt{2}\left(\int_0^{\frac{1}{2}\pi}\sqrt{\tan(x)}\,\left(1+\tan(x)^2\right)\mathrm{e}^{t\,x-\frac{1}{2}\tan(x)}\,\mathrm{d}x\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{1}{2}\pi$

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{1}{2}\pi$

Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {2}{{\rm e}^{-1/2\,\tan \left( x \right) }}
\sqrt {
\tan \left( x \right) } \left( 1+ \left( \tan \left( x \right)
 \right) ^{2} \right) }{\sqrt {\pi}}}
```

"i is", 5,

" --"

$$g := t \to \mathrm{e}^t$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\frac{\sqrt{\ln(y\sim)}\,\sqrt{2}}{y\sim^{3/2}\sqrt{\pi}}\right], [1, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"},\ \mathrm{e}^x,\ \text{"base"},\ \frac{1}{2}\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}},\ \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"},\ \frac{1}{2}\,\frac{\sqrt{\ln(x)}\,\sqrt{2}}{x^{3/2}\,\sqrt{\pi}}$$

$$\text{"F(x)"},\ \frac{1}{2}\,\frac{\sqrt{2}\left(\sqrt{\pi}\,\sqrt{2}\,\operatorname{erf}\left(\frac{1}{2}\,\sqrt{\ln(x)}\,\sqrt{2}\right)\sqrt{x}-2\,\sqrt{\ln(x)}\right)}{\sqrt{\pi}\,\sqrt{x}}$$

"IDF(x)", [[ ], [0, 1], ["Continuous", "IDF"]]

$$\text{"S(x)"},\ \frac{-\sqrt{\pi}\,\operatorname{erf}\left(\frac{1}{2}\,\sqrt{\ln(x)}\,\sqrt{2}\right)\sqrt{x}+\sqrt{\ln(x)}\,\sqrt{2}+\sqrt{x}\,\sqrt{\pi}}{\sqrt{\pi}\,\sqrt{x}}$$

$$\text{"h(x)"},\ \frac{1}{2}\,\frac{\sqrt{\ln(x)}\,\sqrt{2}}{x\left(-\sqrt{\pi}\,\operatorname{erf}\left(\frac{1}{2}\,\sqrt{\ln(x)}\,\sqrt{2}\right)\sqrt{x}+\sqrt{\ln(x)}\,\sqrt{2}+\sqrt{x}\,\sqrt{\pi}\right)}$$

"mean and variance", ∞, *undefined*

$$\text{"MF"},\ \frac{1}{2}\,\frac{1}{\sqrt{\pi}}\left(\sqrt{2}\left(\lim_{\_u\to\infty}\left(-\frac{2\left(-\sqrt{\_u}\,e^{\frac{1}{2}(2\,r\sim-1)\,\_u}\,\sqrt{-4\,r\sim+2}+\sqrt{\pi}\,\operatorname{erf}\left(\frac{1}{2}\,\sqrt{-4\,r\sim+2}\,\sqrt{\_u}\right)\right)}{(2\,r\sim-1)\,\sqrt{-4\,r\sim+2}}\right)\right)\right)$$

$$\text{"MGF"},\ \int_{1}^{\infty}\frac{1}{2}\,\frac{e^{t\,x}\,\sqrt{\ln(x)}\,\sqrt{2}}{x^{3/2}\,\sqrt{\pi}}\,dx$$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value
WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value

```
1/2\,{\frac {\sqrt {\ln  \left( x \right) }\sqrt {2}}{{x}^{3/2}
\sqrt {
\pi}}}
```

"i is", 6,
" ---
----------"

$$g := t \to \ln(t)$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,y\sim - \frac{1}{2}\,\mathrm{e}^{y\sim}}}{\sqrt{\pi}}\right], [-\infty, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \ln(x), \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}\,x}\,\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}$$

$$\text{"F(x)"}, \int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,t - \frac{1}{2}\,\mathrm{e}^{t}}}{\sqrt{\pi}}\,\mathrm{d}t$$

$$\text{"S(x)"}, 1 - \left(\int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,t - \frac{1}{2}\,\mathrm{e}^{t}}}{\sqrt{\pi}}\,\mathrm{d}t\right)$$

$$\text{"h(x)"}, -\frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}\left(-1 + \int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,t - \frac{1}{2}\,\mathrm{e}^{t}}}{\sqrt{\pi}}\,\mathrm{d}t\right)}$$

$$\text{"mean and variance"}, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x\,\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}\,\mathrm{d}x, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x^{2}\,\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

$$-\left(\int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x\,\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}\,\mathrm{d}x\right)^{2}$$

$$\text{"MF"}, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x^{r\sim}\,\sqrt{2}\,\mathrm{e}^{\frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

$$\text{"MGF"}, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{t\,x + \frac{3}{2}\,x - \frac{1}{2}\,\mathrm{e}^{x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

```
1/2\,{\frac {\sqrt {2}{{\rm e}^{3/2\,x-1/2\,{{\rm e}^{x}}}}}
{\sqrt {
```

\pi}}}
"i is", 7,
" ---
----------"

$$g := t \to \mathrm{e}^{-t}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{-\ln(y\sim)}\,\sqrt{2}}{\sqrt{y\sim}\,\sqrt{\pi}}\right], [0, 1], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \mathrm{e}^{-x}, \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\,\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{-\ln(x)}\,\sqrt{2}}{\sqrt{x}\,\sqrt{\pi}}$$

$$\text{"F(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\left(2\sqrt{-\ln(x)}\,\sqrt{x} - \sqrt{\pi}\,\sqrt{2}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{-\ln(x)}\,\sqrt{2}\right) + \sqrt{\pi}\,\sqrt{2}\right)}{\sqrt{\pi}}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous"}, \text{"IDF"}]]$$

$$\text{"S(x)"}, -\frac{\sqrt{x}\,\sqrt{2}\,\sqrt{-\ln(x)} - \mathrm{erf}\left(\frac{1}{2}\sqrt{-\ln(x)}\,\sqrt{2}\right)\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{1}{2}\,\frac{\sqrt{-\ln(x)}\,\sqrt{2}}{\sqrt{x}\left(\sqrt{x}\,\sqrt{2}\,\sqrt{-\ln(x)} - \mathrm{erf}\left(\frac{1}{2}\sqrt{-\ln(x)}\,\sqrt{2}\right)\sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \frac{1}{9}\sqrt{3}, \frac{1}{25}\sqrt{5} - \frac{1}{27}$$

$$\text{"MF"}, \frac{\sqrt{2}}{(2\,r\sim + 1)\sqrt{4\,r\sim + 2}}$$

$$\text{"MGF"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^1 \frac{\mathrm{e}^{t x}\sqrt{-\ln(x)}}{\sqrt{x}}\,\mathrm{d}x\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, 1
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random

variable, 1

Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {-\ln  \left( x \right) }\sqrt {2}}{\sqrt {x}
\sqrt
{\pi}}}
```

"i is", 8,

" --"

$$g := t \to -\ln(t)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,y\sim-\frac{1}{2}\,\mathrm{e}^{-y\sim}}}{\sqrt{\pi}}\right], [-\infty, \infty], ["\text{Continuous}", "\text{PDF}"]\right]$$

$$"\text{l and u}", 0, \infty$$

$$"\text{g(x)}", -\ln(x), "\text{base}", \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}\,x}\sqrt{2}}{\sqrt{\pi}}, "\text{ChiSquareRV(3)}"$$

$$"\text{f(x)}", \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,x-\frac{1}{2}\,\mathrm{e}^{-x}}}{\sqrt{\pi}}$$

$$"\text{F(x)}", \int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,t-\frac{1}{2}\,\mathrm{e}^{-t}}}{\sqrt{\pi}}\,\mathrm{d}t$$

$$"\text{S(x)}", 1-\left(\int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,t-\frac{1}{2}\,\mathrm{e}^{-t}}}{\sqrt{\pi}}\,\mathrm{d}t\right)$$

$$"\text{h(x)}", -\frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,x-\frac{1}{2}\,\mathrm{e}^{-x}}}{\sqrt{\pi}\left(-1+\int_{-\infty}^{x} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,t-\frac{1}{2}\,\mathrm{e}^{-t}}}{\sqrt{\pi}}\,\mathrm{d}t\right)}$$

$$"\text{mean and variance}", \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,x-\frac{1}{2}\,\mathrm{e}^{-x}}}{\sqrt{\pi}}\,\mathrm{d}x, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x^2\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}\,x-\frac{1}{2}\,\mathrm{e}^{-x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

$$-\left(\int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}x-\frac{1}{2}\mathrm{e}^{-x}}}{\sqrt{\pi}}\,\mathrm{d}x\right)^2$$

$$\text{"MF"}, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{x^{r\sim}\sqrt{2}\,\mathrm{e}^{-\frac{3}{2}x-\frac{1}{2}\mathrm{e}^{-x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

$$\text{"MGF"}, \int_{-\infty}^{\infty} \frac{1}{2}\,\frac{\sqrt{2}\,\mathrm{e}^{tx-\frac{3}{2}x-\frac{1}{2}\mathrm{e}^{-x}}}{\sqrt{\pi}}\,\mathrm{d}x$$

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1/2\,{\frac {\sqrt {2}{{\rm e}^{-3/2\,x-1/2\,{{\rm e}^{-x}}}}}
{\sqrt {
\pi}}}
```

"i is", 9,

" ---
----------"

$$g := t \to \ln(t+1)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{\mathrm{e}^{y\sim}-1}\,\mathrm{e}^{-\frac{1}{2}\mathrm{e}^{y\sim}+\frac{1}{2}+y\sim}}{\sqrt{\pi}}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \ln(x+1), \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{\mathrm{e}^{x}-1}\,\mathrm{e}^{-\frac{1}{2}\mathrm{e}^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}$$

$$\text{"F(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\sqrt{\pi}\,\sqrt{2}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\mathrm{e}^{x}-1}\,\sqrt{2}\right)-2\sqrt{\mathrm{e}^{x}-1}\,\mathrm{e}^{-\frac{1}{2}\mathrm{e}^{x}+\frac{1}{2}}\right)}{\sqrt{\pi}}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous"}, \text{"IDF"}]]$$

$$\text{"S(x)"}, \frac{\sqrt{2}\,\sqrt{\mathrm{e}^{x}-1}\,\mathrm{e}^{-\frac{1}{2}\mathrm{e}^{x}+\frac{1}{2}}-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{\mathrm{e}^{x}-1}\,\sqrt{2}\right)+\sqrt{\pi}}{\sqrt{\pi}}$$

$$"h(x)",\ \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}}-\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{e^{x}-1}\,\sqrt{2}\right)+\sqrt{\pi}}$$

$$"mean and variance",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{x\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}\,dx,$$

$$\int_{0}^{\infty}\frac{1}{2}\,\frac{x^{2}\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}\,dx-\left(\int_{0}^{\infty}\frac{1}{2}\,\frac{x\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}\,dx\right)^{2}$$

$$"MF",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{x^{r\sim}\sqrt{2}\,\sqrt{e^{x}-1}\,e^{-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}\,dx$$

$$"MGF",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{e^{x}-1}\,e^{tx-\frac{1}{2}e^{x}+\frac{1}{2}+x}}{\sqrt{\pi}}\,dx$$

```
1/2\,{\frac {\sqrt {{{\rm e}^{x}}-1}\sqrt {2}{{\rm e}^{-1/2\,{
{\rm e}^
{x}}+1/2+x}}}{\sqrt {\pi}}}
```

"i is", 10,

" ---
----------"

$$g := t \to \frac{1}{\ln(t+2)}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{e^{\frac{1}{y\sim}}-2}\,e^{-\frac{1}{2}\,\frac{e^{\frac{1}{y\sim}}y\sim-2y\sim-2}{y\sim}}}{\sqrt{\pi}\,y\sim^{2}}\right],\left[0,\frac{1}{\ln(2)}\right],["Continuous",\right.\right.$$

$$\left."PDF"]\right]$$

$$"l and u",\ 0,\ \infty$$

$$"g(x)",\ \frac{1}{\ln(x+2)},\ "base",\ \frac{1}{2}\,\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\,\sqrt{2}}{\sqrt{\pi}},\ "ChiSquareRV(3)"$$

$$\text{"f(x)"}, \frac{1}{2} \frac{\sqrt{2}\sqrt{e^{\frac{1}{x}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{x}}x-2x-2}{x}}}{\sqrt{\pi}\, x^2}$$

$$\text{"F(x)"}, \frac{1}{2} \frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{e^{\frac{1}{t}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{t}}t-2t-2}{t}}}{t^2}\, dt\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, -\frac{1}{2} \frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{e^{\frac{1}{t}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{t}}t-2t-2}{t}}}{t^2}\, dt\right)-2\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{\sqrt{2}\sqrt{e^{\frac{1}{x}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{x}}x-2x-2}{x}}}{x^2\left(\sqrt{2}\left(\int_0^x \frac{\sqrt{e^{\frac{1}{t}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{t}}t-2t-2}{t}}}{t^2}\, dt\right)-2\sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \frac{1}{2} \frac{\sqrt{2}\left(\int_0^{\frac{1}{\ln(2)}} \frac{\sqrt{e^{\frac{1}{x}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{x}}x-2x-2}{x}}}{x}\, dx\right)}{\sqrt{\pi}}, \frac{1}{2}\frac{1}{\pi^{3/2}}\Bigg(\sqrt{2}\Bigg(\Bigg($$

$$\int_0^{\frac{1}{\ln(2)}} \sqrt{e^{\frac{1}{x}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{x}}x-2x-2}{x}}\, dx\Bigg)\pi - \left(\int_0^{\frac{1}{\ln(2)}} \frac{\sqrt{e^{\frac{1}{x}}-2}\; e^{-\frac{1}{2}\frac{e^{\frac{1}{x}}x-2x-2}{x}}}{x}\right.$$

$$\left.\left.dx\right)^2 \sqrt{\pi}\right)$$

$$\text{"MF"}, \int_0^{\frac{1}{\ln(2)}} \frac{1}{2} \frac{x^{r\sim} \sqrt{2} \sqrt{e^{\frac{1}{x}} - 2}\, e^{-\frac{1}{2} \frac{e^{\frac{1}{x}} x - 2x - 2}{x}}}{\sqrt{\pi}\, x^2} \, dx$$

$$\text{"MGF"}, \frac{1}{2} \frac{\sqrt{2} \left(\int_0^{\frac{1}{\ln(2)}} \frac{e^{-\frac{1}{2} \frac{-2 t x^2 + e^{\frac{1}{x}} x - 2x - 2}{x}} \sqrt{e^{\frac{1}{x}} - 2}}{x^2} \, dx \right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* $\frac{1}{\ln(2)}$

Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {{{\rm e}^{{x}^{-1}}}-2}\sqrt {2}}{\sqrt
{\pi}{x}^{
2}}{{\rm e}^{-1/2\,{\frac {{{\rm e}^{{x}^{-1}}}x-2\,x-2}{x}}}}}
```

"i is", 11,

" --"

$$g := t \rightarrow \tanh(t)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow -\frac{1}{2} \frac{\sqrt{\operatorname{arctanh}(y\sim)}\, \sqrt{2}}{\sqrt{\frac{y\sim + 1}{\sqrt{-y\sim^2 + 1}}}\, \sqrt{\pi}\, (y\sim^2 - 1)} \right], [0, 1], [\text{"Continuous"}, \text{"PDF"}] \right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \tanh(x), \text{"base"}, \frac{1}{2} \frac{\sqrt{x}\, e^{-\frac{1}{2} x} \sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, -\frac{1}{2}\frac{\sqrt{\operatorname{arctanh}(x)}\sqrt{2}}{\sqrt{\frac{x+1}{\sqrt{-x^2+1}}}\sqrt{\pi}\,(x^2-1)}$$

$$\text{"F(x)"}, -\frac{1}{2}\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arctanh}(t)}}{\sqrt{\frac{t+1}{\sqrt{-t^2+1}}}\,(t^2-1)}\,\mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, \frac{1}{2}\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arctanh}(t)}}{\sqrt{\frac{t+1}{\sqrt{-t^2+1}}}\,(t^2-1)}\,\mathrm{d}t\right)+2\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{\sqrt{\operatorname{arctanh}(x)}\sqrt{2}}{\sqrt{\frac{x+1}{\sqrt{-x^2+1}}}\,(x^2-1)\left(\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arctanh}(t)}}{\sqrt{\frac{t+1}{\sqrt{-t^2+1}}}\,(t^2-1)}\,\mathrm{d}t\right)+2\sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \frac{1}{2}\frac{\sqrt{2}\left(\int_0^1 \frac{x\sqrt{\operatorname{arctanh}(x)}}{\sqrt{x+1}\,(-x^2+1)^{3/4}}\,\mathrm{d}x\right)}{\sqrt{\pi}},$$

$$\frac{1}{2}\frac{\sqrt{2}\left(\left(\int_0^1 \frac{x^2\sqrt{\operatorname{arctanh}(x)}}{\sqrt{x+1}\,(-x^2+1)^{3/4}}\,\mathrm{d}x\right)\pi-\left(\int_0^1 \frac{x\sqrt{\operatorname{arctanh}(x)}}{\sqrt{x+1}\,(-x^2+1)^{3/4}}\,\mathrm{d}x\right)^2\sqrt{\pi}\right)}{\pi^{3/2}}$$

$$\text{"MF"}, \int_0^1 \left(-\frac{1}{2}\frac{x^{r\sim}\sqrt{\operatorname{arctanh}(x)}\sqrt{2}}{\sqrt{\frac{x+1}{\sqrt{-x^2+1}}}\sqrt{\pi}\,(x^2-1)}\right)\mathrm{d}x$$

$$\text{"MGF"}, \frac{1}{2}\frac{\sqrt{2}\left(\int_0^1 \frac{e^{tx}\sqrt{\operatorname{arctanh}(x)}}{\sqrt{x+1}\,(-x^2+1)^{3/4}}\,\mathrm{d}x\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random variable, 1
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random variable, 1
Resetting high to RV's maximum support value

```
-1/2\,{\frac {\sqrt {{\rm arctanh} \left(x\right)}\sqrt {2}}
{\sqrt {
\pi} \left( {x}^{2}-1 \right) }{\frac {1}{\sqrt {{\frac {x+1}
{\sqrt {-
{x}^{2}+1}}}}}}}
```

"i is", 12,
" ---"

$$g := t \to \sinh(t)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{\operatorname{arcsinh}(y\sim)}\,\sqrt{2}}{\sqrt{y\sim+\sqrt{y\sim^2+1}}\,\sqrt{\pi}\,\sqrt{y\sim^2+1}}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, \sinh(x), \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\,\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{\operatorname{arcsinh}(x)}\,\sqrt{2}}{\sqrt{x+\sqrt{x^2+1}}\,\sqrt{\pi}\,\sqrt{x^2+1}}$$

$$\text{"F(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arcsinh}(t)}}{\sqrt{t+\sqrt{t^2+1}}\,\sqrt{t^2+1}}\,dt\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, -\frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arcsinh}(t)}}{\sqrt{t+\sqrt{t^2+1}}\,\sqrt{t^2+1}}\,dt\right)-2\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{\sqrt{\operatorname{arcsinh}(x)}\,\sqrt{2}}{\sqrt{x+\sqrt{x^2+1}}\,\sqrt{x^2+1}\left(\sqrt{2}\left(\int_0^x \frac{\sqrt{\operatorname{arcsinh}(t)}}{\sqrt{t+\sqrt{t^2+1}}\,\sqrt{t^2+1}}\,dt\right)-2\sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \infty, \mathit{undefined}$$

$$\text{"MF"}, \int_0^\infty \frac{1}{2}\,\frac{x^{r\sim}\sqrt{\operatorname{arcsinh}(x)}\,\sqrt{2}}{\sqrt{x+\sqrt{x^2+1}}\,\sqrt{\pi}\,\sqrt{x^2+1}}\,dx$$

$$\text{"MGF"}, \int_0^\infty \frac{1}{2}\,\frac{e^{tx}\sqrt{\operatorname{arcsinh}(x)}\,\sqrt{2}}{\sqrt{x+\sqrt{x^2+1}}\,\sqrt{\pi}\,\sqrt{x^2+1}}\,dx$$

```
1/2\,{\frac {\sqrt {{\rm arcsinh} \left(x\right)}\sqrt {2}}
{\sqrt {x+
\sqrt {{x}^{2}+1}}\sqrt {\pi}\sqrt {{x}^{2}+1}}}
```

"i is", 13,

" ---"

$$g := t \to \operatorname{arcsinh}(t)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{\sinh(y\sim)}\,e^{-\frac{1}{2}\sinh(y\sim)}\,\sqrt{2}\,\cosh(y\sim)}{\sqrt{\pi}}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \operatorname{arcsinh}(x), \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\,\sqrt{2}\,\cosh(x)}{\sqrt{\pi}}$$

$$\text{"F(x)"}, \frac{\operatorname{erf}\left(\frac{1}{2}\sqrt{e^{2x}-1}\,e^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{e^{2x}-1}\,e^{-\frac{1}{2}x+\frac{1}{4}e^{-x}-\frac{1}{4}e^{x}}}{\sqrt{\pi}}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous"}, \text{"IDF"}]]$$

$$\text{"S(x)"}, -\frac{\operatorname{erf}\left(\frac{1}{2}\sqrt{e^{2x}-1}\,e^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{e^{2x}-1}\,e^{-\frac{1}{4}\left(e^{2x}+2xe^{x}-1\right)e^{-x}}-\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{1}{2}\frac{\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\operatorname{erf}\left(\frac{1}{2}\sqrt{e^{2x}-1}\,e^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{e^{2x}-1}\,e^{-\frac{1}{4}\left(e^{2x}+2xe^{x}-1\right)e^{-x}}-\sqrt{\pi}}$$

$$\text{"mean and variance"}, \int_0^\infty \frac{1}{2}\frac{x\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,dx,$$

$$\int_0^\infty \frac{1}{2}\frac{x^2\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,dx$$

$$-\left(\int_0^\infty \frac{1}{2}\frac{x\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,dx\right)^2$$

$$\text{"MF"}, \int_0^\infty \frac{1}{2}\frac{x^{r\sim}\sqrt{\sinh(x)}\,e^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,dx$$

$$\text{"MGF"}, \int_0^\infty \frac{1}{2}\frac{\sqrt{\sinh(x)}\sqrt{2}\cosh(x)\,e^{tx-\frac{1}{2}\sinh(x)}}{\sqrt{\pi}}\,dx$$

```
1/2\,{\frac {\sqrt {\sinh \left( x \right) }{{\rm e}^{-1/2\,\sinh
 \left( x \right) }}\sqrt {2}\cosh \left( x \right) }{\sqrt {\pi}}}
```

"i is", 14,

" --"

$$g := t \rightarrow \operatorname{csch}(t+1)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2}\frac{\sqrt{-1+\operatorname{arccsch}(y\sim)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arccsch}(y\sim)}\sqrt{2}}{\sqrt{\pi}\sqrt{y\sim^2+1}\,|y\sim|}\right], \left[0, \frac{2}{e-e^{-1}}\right], \right.$$

$$\left.[\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)", } \operatorname{csch}(x+1), \text{ "base", } \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{ "ChiSquareRV(3)"}$$

$$\text{"f(x)", } \frac{1}{2}\,\frac{\sqrt{-1+\operatorname{arccsch}(x)}\,\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arccsch}(x)}\sqrt{2}}{\sqrt{\pi}\,\sqrt{x^2+1}\,|x|}$$

"i is", 15,

" ---
----------"

$$g := t \to \operatorname{arccsch}(t+1)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{-\frac{\sinh(y\sim)-1}{\sinh(y\sim)}}\,\mathrm{e}^{\frac{1}{2}\,\frac{\sinh(y\sim)-1}{\sinh(y\sim)}}\cosh(y\sim)}{\sqrt{\pi}\,\sinh(y\sim)^2}\right], \left[0, \ln\left(1+\sqrt{2}\right)\right], \left[\text{"Continuous", "PDF"}\right]\right]$$

$$\text{"l and u", } 0, \infty$$

$$\text{"g(x)", } \operatorname{arccsch}(x+1), \text{ "base", } \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{ "ChiSquareRV(3)"}$$

$$\text{"f(x)", } \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{-\frac{\sinh(x)-1}{\sinh(x)}}\,\mathrm{e}^{\frac{1}{2}\,\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)}{\sqrt{\pi}\,\sinh(x)^2}$$

$$\text{"F(x)", } \frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{-\frac{\sinh(t)-1}{\sinh(t)}}\,\mathrm{e}^{\frac{1}{2}\,\frac{\sinh(t)-1}{\sinh(t)}}\cosh(t)}{\sinh(t)^2}\,\mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)", } -\frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{-\frac{\sinh(t)-1}{\sinh(t)}}\,\mathrm{e}^{\frac{1}{2}\,\frac{\sinh(t)-1}{\sinh(t)}}\cosh(t)}{\sinh(t)^2}\,\mathrm{d}t\right)-2\sqrt{\pi}}{\sqrt{\pi}}$$

$$"h(x)", -\frac{\sqrt{2}\sqrt{-\frac{\sinh(x)-1}{\sinh(x)}}\,e^{\frac{1}{2}\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)}{\sinh(x)^2\left(\sqrt{2}\left(\int_0^x \frac{\sqrt{-\frac{\sinh(t)-1}{\sinh(t)}}\,e^{\frac{1}{2}\frac{\sinh(t)-1}{\sinh(t)}}\cosh(t)}{\sinh(t)^2}\,dt\right)-2\sqrt{\pi}\right)}$$

$$"mean and variance", \frac{\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{x\,e^{\frac{1}{2}\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\sqrt{-\sinh(x)+1}}{\sqrt{\sinh(x)}\,(-1+\cosh(2x))}\,dx\right)}{\sqrt{\pi}},$$

$$\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{x^2\,e^{\frac{1}{2}\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\sqrt{-\sinh(x)+1}}{\sqrt{\sinh(x)}\,(-1+\cosh(2x))}\,dx\right)\pi\right.$$

$$\left.-2\left(\int_0^{\ln(1+\sqrt{2})}\frac{x\,e^{\frac{1}{2}\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\sqrt{-\sinh(x)+1}}{\sqrt{\sinh(x)}\,(-1+\cosh(2x))}\,dx\right)^2\sqrt{\pi}\right)$$

$$"MF", \int_0^{\ln(1+\sqrt{2})}\frac{1}{2}\,\frac{x^{r\sim}\sqrt{2}\sqrt{-\frac{\sinh(x)-1}{\sinh(x)}}\,e^{\frac{1}{2}\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)}{\sqrt{\pi}\,\sinh(x)^2}\,dx$$

$$"MGF", \frac{\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{e^{\frac{1}{2}\frac{2tx\sinh(x)+\sinh(x)-1}{\sinh(x)}}\cosh(x)\sqrt{-\sinh(x)+1}}{\sqrt{\sinh(x)}\,(-1+\cosh(2x))}\,dx\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\ln(1+\sqrt{2})$
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\ln(1+\sqrt{2})$
Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {2}\cosh \left( x \right) }{\sqrt {\pi} \left
(
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\sinh \left( x \right)  \right) ^{2}}\sqrt {-{\frac {\sinh \left
( x
 \right) -1}{\sinh \left( x \right) }}}{{\rm e}^{1/2\,{\frac
{\sinh
 \left( x \right) -1}{\sinh \left( x \right) }}}}}
```

"i is", 16,

" --"

$$g := t \to \frac{1}{\tanh(t+1)}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{y\sim}\right)}\;\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{y\sim}\right)}\sqrt{2}}{\sqrt{\pi}\,(y\sim^2-1)}\right], \left[1, \frac{\mathrm{e}+\mathrm{e}^{-1}}{\mathrm{e}-\mathrm{e}^{-1}}\right], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$\text{"l and u"}, 0, \infty$$

$$\text{"g(x)"}, \frac{1}{\tanh(x+1)}, \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\;\mathrm{e}^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\,\frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\;\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}\sqrt{2}}{\sqrt{\pi}\,(x^2-1)}$$

$$\text{"F(x)"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\int_1^x \frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{t}\right)}\;\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{t}\right)}}{t^2-1}\,\mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, -\frac{1}{2}\,\frac{\sqrt{2}\left(\int_1^x \frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{t}\right)}\;\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{t}\right)}}{t^2-1}\,\mathrm{d}t\right)-2\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}\sqrt{2}}{\left(x^2-1\right)\left(\sqrt{2}\left(\int_1^x \frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{t}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{t}\right)}}{t^2-1}\,dt\right)-2\sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}}{x^2-1}\,dx\right)}{\sqrt{\pi}},$$

$$\frac{1}{2}\,\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x^2\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}}{x^2-1}\,dx\right)\pi - \left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}}{x^2-1}\,dx\right)^2\sqrt{\pi}\right)$$

$$\text{"MF"}, \int_1^{\frac{e+e^{-1}}{e-e^{-1}}} \frac{1}{2}\,\frac{x^{r\sim}\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}\sqrt{2}}{\sqrt{\pi}\left(x^2-1\right)}\,dx$$

$$\text{"MGF"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{\sqrt{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\,e^{t\,x+\frac{1}{2}-\frac{1}{2}\operatorname{arctanh}\left(\frac{1}{x}\right)}}{x^2-1}\,dx\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable

1

Resetting low to RV's minimum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{e+e^{-1}}{e-e^{-1}}$

Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {-1+{\rm arctanh} \left({x}^{-1}\right)}{{\rm
e}^{1
/2-1/2\,{\rm arctanh} \left({x}^{-1}\right)}}\sqrt {2}}{\sqrt
{\pi}
 \left( {x}^{2}-1 \right) }}
```

"i is", 17,

" --"

$$g := t \to \frac{1}{\sinh(t+1)}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{y\sim}\right)}\;e^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{y\sim}\right)}\sqrt{2}}{\sqrt{\pi}\,\sqrt{y\sim^2+1}\,|y\sim|}\right], \left[0, -\frac{2}{e^{-1}-e}\right], \left["\text{Continuous}", "\text{PDF}"\right]\right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\sinh(x+1)}$, "base", $\frac{1}{2}\,\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}$, "ChiSquareRV(3)"

"f(x)", $\frac{1}{2}\,\frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\;e^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}\sqrt{2}}{\sqrt{\pi}\,\sqrt{x^2+1}\,|x|}$

"F(x)", $\frac{1}{2}\,\frac{\sqrt{2}\left(\int_0^x \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\;e^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{t}\right)}}{\sqrt{t^2+1}\,|t|}\,dt\right)}{\sqrt{\pi}}$

$$
\text{"S(x)"},\ \frac{1}{2}\,\frac{-\sqrt{2}\left(\displaystyle\int_0^x \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{t}\right)}}{\sqrt{t^2+1}\ |t|}\,\mathrm{d}t\right)+2\sqrt{\pi}}{\sqrt{\pi}}
$$

$$
\text{"h(x)"},\ \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}\sqrt{2}}{\sqrt{x^2+1}\ |x|\left(-\sqrt{2}\left(\displaystyle\int_0^x \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{t}\right)}}{\sqrt{t^2+1}\ |t|}\,\mathrm{d}t\right)+2\sqrt{\pi}\right)}
$$

$$
\text{"mean and variance"},\ \frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^{\frac{2\mathrm{e}}{\mathrm{e}^2-1}} \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}}{\sqrt{x^2+1}}\,\mathrm{d}x\right)}{\sqrt{\pi}},
$$

$$
\frac{1}{2}\,\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_0^{\frac{2\mathrm{e}}{\mathrm{e}^2-1}} \frac{x\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}}{\sqrt{x^2+1}}\,\mathrm{d}x\right)\pi\right.
$$

$$
\left.-\left(\int_0^{\frac{2\mathrm{e}}{\mathrm{e}^2-1}} \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}}{\sqrt{x^2+1}}\,\mathrm{d}x\right)^2\sqrt{\pi}\right)
$$

$$
\text{"MF"},\ \int_0^{-\frac{2}{\mathrm{e}^{-1}-\mathrm{e}}} \frac{1}{2}\,\frac{x^{r\sim}\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\ \mathrm{e}^{\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}\sqrt{2}}{\sqrt{\pi}\ \sqrt{x^2+1}\ |x|}\,\mathrm{d}x
$$

$$\text{"MGF"}, \frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^{\frac{2\,e}{e^2-1}} \frac{\sqrt{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\; e^{t\,x+\frac{1}{2}-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)}}{\sqrt{x^2+1}\;x}\,dx\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $-\frac{2}{e^{-1}-e}$
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $-\frac{2}{e^{-1}-e}$
Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {-1+{\rm arcsinh} \left({x}^{-1}\right)}{{\rm
e}^{1
/2-1/2\,{\rm arcsinh} \left({x}^{-1}\right)}}\sqrt {2}}{\sqrt
{\pi}
\sqrt {{x}^{2}+1} \left| x \right| }}
```

"i is", 18,
" ---
----------"

$$g := t \rightarrow \frac{1}{\operatorname{arcsinh}(t+1)}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2}\,\frac{\sqrt{-1+\sinh\left(\frac{1}{y\sim}\right)}\; e^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{y\sim}\right)}\sqrt{2}\,\cosh\left(\frac{1}{y\sim}\right)}{\sqrt{\pi}\;y\sim^2}\right], \left[0, \frac{1}{\ln\left(1+\sqrt{2}\right)}\right], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, \frac{1}{\operatorname{arcsinh}(x+1)}, \text{"base"}, \frac{1}{2}\,\frac{\sqrt{x}\;e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2} \frac{\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\, e^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)} \sqrt{2}\cosh\left(\frac{1}{x}\right)}{\sqrt{\pi}\, x^2}$$

"F(x)",

$$-\frac{1}{\sqrt{\pi}}\left(-e^{\frac{1}{4}\frac{2x-2+e^{-\frac{1}{x}}x-e^{\frac{1}{x}}x}{x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right.$$

$$\left.+\operatorname{erf}\left(\frac{1}{2}e^{-\frac{1}{2x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right)\sqrt{\pi}-\sqrt{\pi}\right)$$

$$\text{"IDF(x)"}, \left[\left[s \rightarrow RootOf\left(\operatorname{erf}\left(\frac{1}{2}e^{-\frac{1}{2\_Z}}\sqrt{e^{\frac{2}{\_Z}}-2e^{\frac{1}{\_Z}}-1}\right)\sqrt{\pi}+s\sqrt{\pi}\right.\right.\right.$$

$$\left.\left.-e^{-\frac{1}{4}\frac{\left(e^{\frac{2}{\_Z}}\_Z-2e^{\frac{1}{\_Z}}\_Z+2e^{\frac{1}{\_Z}}-\_Z\right)e^{-\frac{1}{\_Z}}}{\_Z}}\sqrt{e^{\frac{2}{\_Z}}-2e^{\frac{1}{\_Z}}-1}-\sqrt{\pi}\right)\right], [0, 1],$$

$$\left.[\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"}, \frac{1}{\sqrt{\pi}}\left(\operatorname{erf}\left(\frac{1}{2}e^{-\frac{1}{2x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right)\sqrt{\pi}\right.$$

$$\left.-e^{-\frac{1}{4}\frac{\left(e^{\frac{2}{x}}x-2e^{\frac{1}{x}}x+2e^{\frac{1}{x}}-x\right)e^{-\frac{1}{x}}}{x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right)$$

$$\text{"h(x)"}, \frac{1}{2}\left(\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\, e^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}\sqrt{2}\cosh\left(\frac{1}{x}\right)\right) \Big/$$

$$\left(x^2\left(\operatorname{erf}\left(\frac{1}{2}e^{-\frac{1}{2x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right)\sqrt{\pi}\right.\right.$$

$$\left.\left.-e^{-\frac{1}{4}\frac{\left(e^{\frac{2}{x}}x-2e^{\frac{1}{x}}x+2e^{\frac{1}{x}}-x\right)e^{-\frac{1}{x}}}{x}}\sqrt{e^{\frac{2}{x}}-2e^{\frac{1}{x}}-1}\right)\right)$$

"mean and variance",

$$\frac{1}{2}\,\frac{\sqrt{2}\left(\int_{0}^{\frac{1}{\ln(1+\sqrt{2})}}\frac{\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\,\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}\cosh\left(\frac{1}{x}\right)}{x}\,\mathrm{d}x\right)}{\sqrt{\pi}},$$

$$\frac{1}{2}\,\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_{0}^{\frac{1}{\ln(1+\sqrt{2})}}\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\,\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}\cosh\left(\frac{1}{x}\right)\mathrm{d}x\right)\pi\right.$$

$$\left.-\left(\int_{0}^{\frac{1}{\ln(1+\sqrt{2})}}\frac{\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\,\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}\cosh\left(\frac{1}{x}\right)}{x}\,\mathrm{d}x\right)^{2}\sqrt{\pi}\right)$$

$$\text{"MF"},\int_{0}^{\frac{1}{\ln(1+\sqrt{2})}}\frac{1}{2}\,\frac{x^{r\sim}\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\,\mathrm{e}^{\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}\sqrt{2}\cosh\left(\frac{1}{x}\right)}{\sqrt{\pi}\,x^{2}}\,\mathrm{d}x$$

$$\text{"MGF"},\frac{1}{2}\,\frac{\sqrt{2}\left(\int_{0}^{\frac{1}{\ln(1+\sqrt{2})}}\frac{\sqrt{-1+\sinh\left(\frac{1}{x}\right)}\cosh\left(\frac{1}{x}\right)\mathrm{e}^{tx+\frac{1}{2}-\frac{1}{2}\sinh\left(\frac{1}{x}\right)}}{x^{2}}\,\mathrm{d}x\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{1}{\ln(1+\sqrt{2})}$

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{1}{\ln(1+\sqrt{2})}$

Resetting high to RV's maximum support value

```
1/2\,{\frac {\sqrt {-1+\sinh \left( {x}^{-1} \right) }{{\rm e}^
{1/2-1/
2\,\sinh \left( {x}^{-1} \right) }}\sqrt {2}\cosh \left( {x}^
```

```
{-1}
 \right) }{\sqrt {\pi}{x}^{2}}}
```

"i is", 19,
" ---"

$$g := t \to \frac{1}{\operatorname{csch}(t)} + 1$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\,\frac{\sqrt{\operatorname{arccsch}\left(\frac{1}{y\sim -1}\right)}\,\sqrt{2}}{\sqrt{y\sim -1+\sqrt{y\sim^2-2\,y\sim+2}}\,\sqrt{\pi}\,\sqrt{y\sim^2-2\,y\sim+2}}\right], [1, \infty],\right.$$
$$\left.["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

$$"g(x)", \frac{1}{\operatorname{csch}(x)} + 1, "base", \frac{1}{2}\,\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\,\sqrt{2}}{\sqrt{\pi}}, "ChiSquareRV(3)"$$

$$"f(x)", \frac{1}{2}\,\frac{\sqrt{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,\sqrt{2}}{\sqrt{x-1+\sqrt{x^2-2\,x+2}}\,\sqrt{\pi}\,\sqrt{x^2-2\,x+2}}$$

$$"F(x)", \frac{1}{2}\,\frac{\sqrt{2}\left(\int_1^x \frac{\sqrt{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}}{\sqrt{t-1+\sqrt{t^2-2\,t+2}}\,\sqrt{t^2-2\,t+2}}\,dt\right)}{\sqrt{\pi}}$$

$$"S(x)", \frac{1}{2}\,\frac{-\sqrt{2}\left(\int_1^x \frac{\sqrt{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}}{\sqrt{t-1+\sqrt{t^2-2\,t+2}}\,\sqrt{t^2-2\,t+2}}\,dt\right)+2\sqrt{\pi}}{\sqrt{\pi}}$$

$$"h(x)", \left(\sqrt{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,\sqrt{2}\right) \Bigg/ \left(\sqrt{x-1+\sqrt{x^2-2\,x+2}}\,\sqrt{x^2-2\,x+2}\,\left(\right.\right.$$

$$-\sqrt{2}\left(\left(\int_{1}^{x}\frac{\sqrt{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}}{\sqrt{t-1+\sqrt{t^2-2t+2}}\,\sqrt{t^2-2t+2}}\,\mathrm{d}t\right)+2\sqrt{\pi}\right)\Bigg)$$

"mean and variance", ∞, *undefined*

$$\text{"MF"},\ \int_{1}^{\infty}\frac{1}{2}\,\frac{x^{r\sim}\sqrt{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,\sqrt{2}}{\sqrt{x-1+\sqrt{x^2-2x+2}}\,\sqrt{\pi}\,\sqrt{x^2-2x+2}}\,\mathrm{d}x$$

$$\text{"MGF"},\ \int_{1}^{\infty}\frac{1}{2}\,\frac{\mathrm{e}^{tx}\sqrt{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,\sqrt{2}}{\sqrt{x-1+\sqrt{x^2-2x+2}}\,\sqrt{\pi}\,\sqrt{x^2-2x+2}}\,\mathrm{d}x$$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value
WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value

```
1/2\,{\frac {\sqrt {{\rm arccsch} \left( \left( x-1 \right) ^
{-1}
\right)}\sqrt {2}}{\sqrt {x-1+\sqrt {{x}^{2}-2\,x+2}}\sqrt {\pi}
\sqrt
{{x}^{2}-2\,x+2}}}
```

"i is", 20,
" --
----------"

$$g := t \rightarrow \tanh\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow -\frac{1}{2}\,\frac{\sqrt{\frac{1}{\operatorname{arctanh}(y\sim)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(y\sim)}}\,\sqrt{2}}{\sqrt{\pi}\,\operatorname{arctanh}(y\sim)^2\,(y\sim^2-1)}\right], [0, 1], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"},\ \tanh\left(\frac{1}{x}\right),\ \text{"base"},\ \frac{1}{2}\,\frac{\sqrt{x}\,\mathrm{e}^{-\frac{1}{2}x}\,\sqrt{2}}{\sqrt{\pi}},\ \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"},\ -\frac{1}{2}\,\frac{\sqrt{\frac{1}{\operatorname{arctanh}(x)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}\sqrt{2}}{\sqrt{\pi}\;\operatorname{arctanh}(x)^2\,(x^2-1)}$$

$$\text{"F(x)"},\ -\frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^x \frac{\sqrt{\frac{1}{\operatorname{arctanh}(t)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(t)}}}{\operatorname{arctanh}(t)^2\,(t^2-1)}\,\mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"},\ \frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^x \frac{\sqrt{\frac{1}{\operatorname{arctanh}(t)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(t)}}}{\operatorname{arctanh}(t)^2\,(t^2-1)}\,\mathrm{d}t\right)+2\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"},\ -\frac{\sqrt{\frac{1}{\operatorname{arctanh}(x)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}\sqrt{2}}{\operatorname{arctanh}(x)^2\,(x^2-1)\left(\sqrt{2}\left(\displaystyle\int_0^x \frac{\sqrt{\frac{1}{\operatorname{arctanh}(t)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(t)}}}{\operatorname{arctanh}(t)^2\,(t^2-1)}\,\mathrm{d}t\right)+2\sqrt{\pi}\right)}$$

$$\text{"mean and variance"},\ -\frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^1 \frac{x\,\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}}{\operatorname{arctanh}(x)^{5/2}\,(x^2-1)}\,\mathrm{d}x\right)}{\sqrt{\pi}},$$

$$-\frac{1}{2}\,\frac{\sqrt{2}\left(\displaystyle\int_0^1 \frac{x^2\,\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}}{\operatorname{arctanh}(x)^{5/2}\,(x^2-1)}\,\mathrm{d}x\right)\pi+\left(\displaystyle\int_0^1 \frac{x\,\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}}{\operatorname{arctanh}(x)^{5/2}\,(x^2-1)}\,\mathrm{d}x\right)^2\sqrt{\pi}}{\pi^{3/2}}$$

$$\text{"MF"},\ \int_0^1\left(-\frac{1}{2}\,\frac{x^{r\sim}\sqrt{\frac{1}{\operatorname{arctanh}(x)}}\;\mathrm{e}^{-\frac{1}{2\operatorname{arctanh}(x)}}\sqrt{2}}{\sqrt{\pi}\;\operatorname{arctanh}(x)^2\,(x^2-1)}\right)\mathrm{d}x$$

$$\text{"MGF"}, -\frac{1}{2}\frac{\sqrt{2}\left(\int_0^1 \frac{e^{\frac{1}{2}\frac{2\,t\,x\,\operatorname{arctanh}(x)\,-\,1}{\operatorname{arctanh}(x)}}}{(x^2-1)\operatorname{arctanh}(x)^{5/2}}\,dx\right)}{\sqrt{\pi}}$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* 1

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* 1

Resetting high to RV's maximum support value

```
-1/2\,{\frac {\sqrt { \left( {\rm arctanh} \left(x\right)
\right) ^{-1
}}\sqrt {2}}{\sqrt {\pi} \left( {\rm arctanh} \left(x\right)
\right) ^
{2} \left( {x}^{2}-1 \right) }{{\rm e}^{-1/2\, \left( {\rm
arctanh}
\left(x\right) \right) ^{-1}}}}}
```

"i is", 21,

" ---
----------"

$$g := t \to \operatorname{csch}\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{2}\frac{e^{-\frac{1}{2\operatorname{arccsch}(y\sim)}}\sqrt{2}}{\operatorname{arccsch}(y\sim)^{5/2}\sqrt{\pi}\sqrt{y\sim^2+1}\;|y\sim|}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, \operatorname{csch}\left(\frac{1}{x}\right), \text{"base"}, \frac{1}{2}\frac{\sqrt{x}\,e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, \text{"ChiSquareRV(3)"}$$

$$\text{"f(x)"}, \frac{1}{2}\frac{e^{-\frac{1}{2\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{\pi}\sqrt{x^2+1}\;|x|}$$

$$\text{"F(x)"}, \frac{1}{2}\frac{\sqrt{2}\left(\int_0^x \frac{e^{-\frac{1}{2\operatorname{arccsch}(t)}}}{\operatorname{arccsch}(t)^{5/2}\sqrt{t^2+1}\;|t|}\,dt\right)}{\sqrt{\pi}}$$

$$"S(x)",\ \frac{1}{2}\,\frac{-\sqrt{2}\left(\int_{0}^{x}\frac{e^{-\frac{1}{2\,\operatorname{arccsch}(t)}}}{\operatorname{arccsch}(t)^{5/2}\sqrt{t^{2}+1}\ |t|}\,dt\right)+2\sqrt{\pi}}{\sqrt{\pi}}$$

$$"h(x)",\ \frac{e^{-\frac{1}{2\,\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{x^{2}+1}\ |x|\left(-\sqrt{2}\left(\int_{0}^{x}\frac{e^{-\frac{1}{2\,\operatorname{arccsch}(t)}}}{\operatorname{arccsch}(t)^{5/2}\sqrt{t^{2}+1}\ |t|}\,dt\right)+2\sqrt{\pi}\right)}$$

$$"mean and variance",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{e^{-\frac{1}{2\,\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{\pi}\sqrt{x^{2}+1}}\,dx,$$

$$\int_{0}^{\infty}\frac{1}{2}\,\frac{x\,e^{-\frac{1}{2\,\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{\pi}\sqrt{x^{2}+1}}\,dx-\left(\int_{0}^{\infty}\frac{1}{2}\,\frac{e^{-\frac{1}{2\,\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{\pi}\sqrt{x^{2}+1}}\,dx\right)^{2}$$

$$"MF",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{x^{r\sim}\,e^{-\frac{1}{2\,\operatorname{arccsch}(x)}}\sqrt{2}}{\operatorname{arccsch}(x)^{5/2}\sqrt{\pi}\sqrt{x^{2}+1}\ |x|}\,dx$$

$$"MGF",\ \int_{0}^{\infty}\frac{1}{2}\,\frac{e^{\frac{1}{2}\,\frac{2\,t\,x\,\operatorname{arccsch}(x)-1}{\operatorname{arccsch}(x)}}\sqrt{2}}{x\,\operatorname{arccsch}(x)^{5/2}\sqrt{x^{2}+1}\sqrt{\pi}}\,dx$$

"i is", 22,

" --"

$$g := t \rightarrow \operatorname{arccsch}\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{1}{2}\,\frac{\sqrt{2}\sqrt{\sinh(y\sim)}\ e^{-\frac{1}{2}\sinh(y\sim)}\cosh(y\sim)}{\sqrt{\pi}}\right], [0, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

$$"g(x)",\ \operatorname{arccsch}\left(\frac{1}{x}\right), "base",\ \frac{1}{2}\,\frac{\sqrt{x}\ e^{-\frac{1}{2}x}\sqrt{2}}{\sqrt{\pi}}, "ChiSquareRV(3)"$$

$$\text{"f(x)"},\ \frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\cosh(x)}{\sqrt{\pi}}$$

$$\text{"F(x)"},\ \frac{\operatorname{erf}\left(\frac{1}{2}\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{2}x+\frac{1}{4}\mathrm{e}^{-x}-\frac{1}{4}\mathrm{e}^{x}}}{\sqrt{\pi}}$$

"IDF(x)", [[ ], [0, 1], ["Continuous", "IDF"]]

$$\text{"S(x)"},\ -\frac{\operatorname{erf}\left(\frac{1}{2}\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{4}\left(\mathrm{e}^{2x}+2x\mathrm{e}^{x}-1\right)\mathrm{e}^{-x}}-\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"},\ -\frac{1}{2}\,\frac{\sqrt{2}\,\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\cosh(x)}{\operatorname{erf}\left(\frac{1}{2}\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{2}x}\right)\sqrt{\pi}-\sqrt{\mathrm{e}^{2x}-1}\,\mathrm{e}^{-\frac{1}{4}\left(\mathrm{e}^{2x}+2x\mathrm{e}^{x}-1\right)\mathrm{e}^{-x}}-\sqrt{\pi}}$$

$$\text{"mean and variance"},\ \int_0^\infty \frac{1}{2}\,\frac{x\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,\mathrm{d}x,$$

$$\int_0^\infty \frac{1}{2}\,\frac{x^2\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,\mathrm{d}x$$

$$-\left(\int_0^\infty \frac{1}{2}\,\frac{x\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\sqrt{2}\cosh(x)}{\sqrt{\pi}}\,\mathrm{d}x\right)^2$$

$$\text{"MF"},\ \int_0^\infty \frac{1}{2}\,\frac{x^{r\sim}\sqrt{2}\,\sqrt{\sinh(x)}\,\mathrm{e}^{-\frac{1}{2}\sinh(x)}\cosh(x)}{\sqrt{\pi}}\,\mathrm{d}x$$

$$\text{"MGF"},\ \int_0^\infty \frac{1}{2}\,\frac{\sqrt{\sinh(x)}\,\sqrt{2}\cosh(x)\,\mathrm{e}^{tx-\frac{1}{2}\sinh(x)}}{\sqrt{\pi}}\,\mathrm{d}x$$

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1/2\,{\frac {\sqrt {2}\sqrt {\sinh \left( x \right) }{{\rm e}^
{-1/2\,
\sinh \left( x \right) }}\cosh \left( x \right) }{\sqrt {\pi}}}
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