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

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

"i is", 1,
" ---"

$$g := t \rightarrow t^2$$

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

$$\text{"mean and variance"}, 3, 6$$

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

$$\text{"MGF"}, \lim_{x \to \infty} \left(-\frac{\sqrt{x}\, \mathrm{e}^{\frac{1}{2} x (2t-1)} \sqrt{2}\, \sqrt{1-2t} - \sqrt{\pi}\, \operatorname{erf}\left(\frac{1}{2} \sqrt{2}\, \sqrt{1-2t}\, \sqrt{x}\right)}{(1-2t)^{3/2} \sqrt{\pi}} \right)$$

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

"i is", 2,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\, y\sim^5\, \mathrm{e}^{-\frac{1}{2} y\sim^4} \sqrt{2}}{\sqrt{\pi}} \right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}] \right]$$

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

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

$$\text{"f(x)"}, \frac{2\, x^5\, \mathrm{e}^{-\frac{1}{2} x^4} \sqrt{2}}{\sqrt{\pi}}$$

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

$$\text{"IDF(x)"}, \left[\left[s \to RootOf\left(\_Z^2 \sqrt{2}\, \mathrm{e}^{-\frac{1}{2} \_Z^4} - \sqrt{\pi}\, \operatorname{erf}\left(\frac{1}{2} \_Z^2 \sqrt{2}\right) + s \sqrt{\pi} \right) \right], [0, 1], [\text{"Continuous"}, \text{"IDF"}] \right]$$

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

$$\text{"h(x)"}, \frac{2\, x^5\, \mathrm{e}^{-\frac{1}{2} x^4} \sqrt{2}}{x^2 \sqrt{2}\, \mathrm{e}^{-\frac{1}{2} x^4} - \sqrt{\pi}\, \operatorname{erf}\left(\frac{1}{2} x^2 \sqrt{2}\right) + \sqrt{\pi}}$$

$$\text{"mean and variance"}, \frac{3}{2} \frac{2^{1/4}\, \Gamma\left(\frac{3}{4}\right)}{\sqrt{\pi}}, \frac{1}{4} \frac{\sqrt{2} \left(-9\, \Gamma\left(\frac{3}{4}\right)^2 \sqrt{\pi} + 8\pi \right)}{\pi^{3/2}}$$

$$"MF",\ \frac{2^{1+\frac{1}{4}r\sim}\,\Gamma\left(\frac{1}{4}r\sim+\frac{3}{2}\right)}{\sqrt{\pi}}$$

$$"MGF",\ \frac{1}{24}\,\frac{1}{\sqrt{\pi}\,\Gamma\left(\frac{3}{4}\right)}\left(5\,\pi\,2^{1/4}\,\mathrm{hypergeom}\left(\left[\frac{9}{4}\right],\left[\frac{5}{4},\frac{3}{2},\frac{7}{4}\right],\frac{1}{128}\,t^4\right)t^3\right.$$
$$+24\sqrt{2}\,\Gamma\left(\frac{3}{4}\right)\mathrm{hypergeom}\left([2],\left[\frac{3}{4},\frac{5}{4},\frac{3}{2}\right],\frac{1}{128}\,t^4\right)t^2$$
$$+36\,2^{1/4}\,\Gamma\left(\frac{3}{4}\right)^2\mathrm{hypergeom}\left(\left[\frac{7}{4}\right],\left[\frac{1}{2},\frac{3}{4},\frac{5}{4}\right],\frac{1}{128}\,t^4\right)t$$
$$\left.+24\,\Gamma\left(\frac{3}{4}\right)\mathrm{hypergeom}\left(\left[\frac{3}{2}\right],\left[\frac{1}{4},\frac{1}{2},\frac{3}{4}\right],\frac{1}{128}\,t^4\right)\sqrt{\pi}\right)$$

```
2\,{\frac {{x}^{5}{{\rm e}^{-1/2\,{x}^{4}}}\sqrt {2}}{\sqrt
{\pi}}}
```

"i is", 3,
" ---
----------"

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

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

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

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

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

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

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

$$"mean and variance", \frac{\sqrt{2}}{\sqrt{\pi}}, 1-\frac{2}{\pi}$$

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

$$"MGF", \frac{2\,\mathrm{MeijerG}\left([[\,],[\,]],\left[\left[\frac{3}{2},\frac{1}{2},0\right],[\,]\right],\frac{1}{8}t^2\right)}{\pi}$$

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

"i is", 4,

" --"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{\sqrt{2}\,\sin(y\sim)^2\,e^{-\frac{1}{2}\frac{\sin(y\sim)^2}{\cos(y\sim)^2}}}{\sqrt{\pi}\,\cos(y\sim)^4}\right], \left[0, \frac{1}{2}\pi\right], ["Continuous", "PDF"]\right]$$

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

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

$$"f(x)", \frac{\sqrt{2}\,\sin(x)^2\,e^{-\frac{1}{2}\frac{\sin(x)^2}{\cos(x)^2}}}{\sqrt{\pi}\,\cos(x)^4}$$

$$"F(x)", \frac{\sqrt{2}\left(\int_0^x \frac{\sin(t)^2\,e^{-\frac{1}{2}\frac{\sin(t)^2}{\cos(t)^2}}}{\cos(t)^4}\,dt\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"},\ -\frac{\sqrt{2}\left(\int_0^x \frac{\sin(t)^2\, e^{-\frac{1}{2}\frac{\sin(t)^2}{\cos(t)^2}}}{\cos(t)^4}\,dt\right)-\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"},\ -\frac{\sqrt{2}\,\sin(x)^2\, e^{-\frac{1}{2}\frac{\sin(x)^2}{\cos(x)^2}}}{\cos(x)^4\left(\sqrt{2}\left(\int_0^x \frac{\sin(t)^2\, e^{-\frac{1}{2}\frac{\sin(t)^2}{\cos(t)^2}}}{\cos(t)^4}\,dt\right)-\sqrt{\pi}\right)}$$

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

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

$$\left.\left.+4\left(\int_0^{\frac{1}{2}\pi} \frac{e^{\frac{1}{2}\frac{-1+\cos(2x)}{\cos(2x)+1}}\, x\,(-1+\cos(2x))}{(\cos(2x)+1)^2}\,dx\right)^2\sqrt{\pi}\right)\right)$$

$$\text{"MF"},\ \int_0^{\frac{1}{2}\pi} \frac{x^{r\sim}\sqrt{2}\,\sin(x)^2\, e^{-\frac{1}{2}\frac{\sin(x)^2}{\cos(x)^2}}}{\sqrt{\pi}\,\cos(x)^4}\,dx$$

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

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

$$variable, \frac{1}{2}\pi$$

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

```
{\frac {\sqrt {2} \left( \sin \left( x \right)  \right) ^{2}}
{\sqrt {
\pi} \left( \cos \left( x \right)  \right) ^{4}}{{\rm e}^{-1/2\,
{
\frac { \left( \sin \left( x \right)  \right) ^{2}}{ \left( \cos
 \left( x \right)  \right) ^{2}}}}}}
```

"i is", 5,

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

$$g := t \rightarrow e^{t}$$

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

$$\text{"mean and variance"}, \frac{2\sqrt{\pi}\,e^{\frac{1}{2}} + 2\sqrt{\pi}\,e^{\frac{1}{2}}\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) + \sqrt{2}}{\sqrt{\pi}}, -\frac{1}{\pi^{3/2}}\Big(4\,\pi^{3/2}$$

$$e\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right)^2 + 8\,\pi^{3/2}\,e\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) + 4\sqrt{2}\,\pi\,e^{\frac{1}{2}}\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) + 4\,\pi^{3/2}\,e$$

$$-5\,\pi^{3/2}\,e^2\operatorname{erf}\left(\sqrt{2}\right) + 4\sqrt{2}\,\pi\,e^{\frac{1}{2}} - 5\,\pi^{3/2}\,e^2 + 2\sqrt{\pi} - 2\sqrt{2}\,\pi\Big)$$

$$\text{"MF"}, \frac{1}{\sqrt{\pi}}\left(\sqrt{2}\left(r\sim + \frac{1}{2}\,r\sim^2\sqrt{\pi}\,e^{\frac{1}{2}\,r\sim^2}\sqrt{2}\operatorname{erf}\left(\frac{1}{2}\,r\sim\sqrt{2}\right)\right.\right.$$

$$\left.\left. + \frac{1}{2}\sqrt{\pi}\,e^{\frac{1}{2}\,r\sim^2}\sqrt{2}\operatorname{erf}\left(\frac{1}{2}\,r\sim\sqrt{2}\right) + \frac{1}{2}\,r\sim^2\sqrt{\pi}\,e^{\frac{1}{2}\,r\sim^2}\sqrt{2} + \frac{1}{2}\sqrt{\pi}\,e^{\frac{1}{2}\,r\sim^2}\sqrt{2}\right)\right)$$

$$\text{"MGF"}, \int_1^{\infty} \frac{\ln(x)^2\sqrt{2}\,e^{t\,x - \frac{1}{2}\ln(x)^2}}{\sqrt{\pi}\,x}\,dx$$

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

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

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

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

$$\text{"mean and variance"}, \int_{-\infty}^{\infty}\frac{x\,e^{3x-\frac{1}{2}e^{2x}}\sqrt{2}}{\sqrt{\pi}}\,dx, \int_{-\infty}^{\infty}\frac{x^{2}e^{3x-\frac{1}{2}e^{2x}}\sqrt{2}}{\sqrt{\pi}}\,dx$$
$$-\left(\int_{-\infty}^{\infty}\frac{x\,e^{3x-\frac{1}{2}e^{2x}}\sqrt{2}}{\sqrt{\pi}}\,dx\right)^{2}$$

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

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

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

"i is", 7,

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

$$g := t \rightarrow e^{-t}$$
$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

$$\text{"mean and variance"}, -\frac{2\sqrt{\pi}\, e^{\frac{1}{2}}\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) - 2\sqrt{\pi}\, e^{\frac{1}{2}} + \sqrt{2}}{\sqrt{\pi}}, -\frac{1}{\pi^{3/2}}\Big(4\pi^{3/2}$$

$$e\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right)^2 - 8\pi^{3/2} e\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) + 4\sqrt{2}\,\pi\, e^{\frac{1}{2}}\operatorname{erf}\left(\frac{1}{2}\sqrt{2}\right) + 4\pi^{3/2} e$$

$$+ 5\pi^{3/2} e^2 \operatorname{erf}(\sqrt{2}) - 4\sqrt{2}\,\pi\, e^{\frac{1}{2}} - 5\pi^{3/2} e^2 + 2\sqrt{\pi} + 2\sqrt{2}\,\pi\Big)$$

$$\text{"MF"}, \frac{1}{\sqrt{\pi}}\Bigg(\sqrt{2}\Bigg(-r\sim - \frac{1}{2} r\sim^2 \sqrt{\pi}\, e^{\frac{1}{2} r\sim^2}\sqrt{2}\operatorname{erf}\left(\frac{1}{2} r\sim \sqrt{2}\right)$$

$$- \frac{1}{2}\sqrt{\pi}\, e^{\frac{1}{2} r\sim^2}\sqrt{2}\operatorname{erf}\left(\frac{1}{2} r\sim\sqrt{2}\right) + \frac{1}{2} r\sim^2\sqrt{\pi}\, e^{\frac{1}{2} r\sim^2}\sqrt{2} + \frac{1}{2}\sqrt{\pi}\, e^{\frac{1}{2} r\sim^2}\sqrt{2}\Bigg)\Bigg)$$

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

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

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

"i is", 8,

" ---"

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

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

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

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

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

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

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

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

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

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

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

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

"i is", 9,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

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

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

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

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

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

```
2\,x}}+{{\rm e}^{x}}-1/2+x}}\sqrt {2}}{\sqrt {\pi}}}
```
"i is", 10,

" --"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{\left(e^{\frac{1}{y\sim}}-2\right)^2 e^{\frac{1}{2}\frac{-e^{\frac{2}{y\sim}}y\sim+4e^{\frac{1}{y\sim}}y\sim-4y\sim+2}{y\sim}}\sqrt{2}}{\sqrt{\pi}\,y\sim^2}\right],\left[0,\frac{1}{\ln(2)}\right],\right.$$
$$\left.["Continuous", "PDF"]\right]$$

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

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

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

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

$$"IDF(x)", \left[\left[s \to -2 \middle/ \left(\right.\right.\right.$$

$$-e^{2\,RootOf\left(-e^{2\_Z}+4e^{\_Z}+\ln(2)-2\ln\left(2\sqrt{2}\,e^{-\frac{1}{2}\left(e^{\_Z}-2\right)^2}+s\sqrt{\pi}+\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{2}\left(e^{\_Z}-2\right)\right)-\sqrt{\pi}\right)\right.}$$

$$+ 2\_Z - 4\Big)$$

$$- 2\ln\Bigg(2\sqrt{2}$$

$$\mathrm{e}$$

$$-\frac{1}{2}$$

$$\left(\mathrm{e}^{RootOf\left(-\mathrm{e}^{2\_Z} + 4\,\mathrm{e}^{\_Z} + \ln(2) - 2\ln\left(2\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\left(\mathrm{e}^{\_Z}-2\right)^2} + s\sqrt{\pi} + \sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{2}\left(\mathrm{e}^{\_Z}-2\right)\right)\right.\right.}\right.$$

$$\left.\left.\left.-\sqrt{\pi}\right) + 2\_Z - 4\right) - 2\right)^2 + s\sqrt{\pi}$$

$$+ \sqrt{\pi}\,\mathrm{erf}\Bigg(\frac{1}{2}\sqrt{2}$$

$$\left(\mathrm{e}^{RootOf\left(-\mathrm{e}^{2\_Z} + 4\,\mathrm{e}^{\_Z} + \ln(2) - 2\ln\left(2\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\left(\mathrm{e}^{\_Z}-2\right)^2} + s\sqrt{\pi} + \sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{2}\left(\mathrm{e}^{\_Z}-2\right)\right) - \sqrt{\pi}\right)\right.}\right.$$

$$\left.\left.\left.\left.+ 2\_Z - 4\right) - 2\right)\right) - \sqrt{\pi}\right) + \ln(2)$$

$$+ 4$$

$$\mathrm{e}^{RootOf\left(-\mathrm{e}^{2\_Z} + 4\,\mathrm{e}^{\_Z} + \ln(2) - 2\ln\left(2\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}\left(\mathrm{e}^{\_Z}-2\right)^2} + s\sqrt{\pi} + \sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{2}\sqrt{2}\left(\mathrm{e}^{\_Z}-2\right)\right) - \sqrt{\pi}\right)\right.}$$

$$\left.\left.\left.+ 2\_Z - 4\right) - 4\right)\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\Big]$$

"S(x)",

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

"h(x)",

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

"mean and variance", $\dfrac{\sqrt{2}\left(\displaystyle\int_0^{\frac{1}{\ln(2)}}\frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{1}{2}\frac{-e^{\frac{2}{x}}x+4e^{\frac{1}{x}}x-4x+2}{x}}}{x}\,dx\right)}{\sqrt{\pi}}$, $\dfrac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\displaystyle\int_0^{\frac{1}{\ln(2)}}\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{1}{2}\frac{-e^{\frac{2}{x}}x+4e^{\frac{1}{x}}x-4x+2}{x}}\,dx\right)\pi\right.$

$$\left.-2\left(\int_0^{\frac{1}{\ln(2)}}\frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{1}{2}\frac{-e^{\frac{2}{x}}x+4e^{\frac{1}{x}}x-4x+2}{x}}}{x}\,dx\right)^2\sqrt{\pi}\right)$$

"MF", $\displaystyle\int_0^{\frac{1}{\ln(2)}}\frac{x^{r\sim}\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{1}{2}\frac{-e^{\frac{2}{x}}x+4e^{\frac{1}{x}}x-4x+2}{x}}\sqrt{2}}{\sqrt{\pi}\,x^2}\,dx$

$$\text{"MGF"}, \frac{\sqrt{2}\left(\int_{0}^{\frac{1}{\ln(2)}} \frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{1}{2}\frac{2tx^2+4e^{\frac{1}{x}}x-e^{\frac{2}{x}}x-4x+2}{x}}}{x^2}\,dx\right)}{\sqrt{\pi}}$$

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

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

```
{\frac { \left( {{\rm e}^{{x}^{-1}}}-2 \right) ^{2}\sqrt {2}}
{\sqrt {
\pi}{x}^{2}}{{\rm e}^{1/2\,{\frac {1}{x} \left( -{{\rm e}^{2\,
{x}^{-1}
}}x+4\,{{\rm e}^{{x}^{-1}}}x-4\,x+2 \right) }}}}
```

"i is", 11,
" --"

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

$$-\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_0^1 \frac{x^2\operatorname{arctanh}(x)^2 e^{-\frac{1}{2}\operatorname{arctanh}(x)^2}}{x^2-1}\,dx\right)\pi\right.$$

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

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

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

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

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

"i is", 12,

" --"

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

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

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

"F(x)",

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

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

"S(x)",

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

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

"mean and variance", $\int_0^{\infty} \frac{x \operatorname{arcsinh}(x)^2 e^{-\frac{1}{2}\operatorname{arcsinh}(x)^2}\sqrt{2}}{\sqrt{\pi}\sqrt{x^2+1}}\,dx$,

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

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

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

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

"i is", 13,

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

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

$$\text{"F(x)"}, \frac{1}{2}\frac{1}{\sqrt{\pi}}\left(\left(-2\sqrt{\pi}\operatorname{erf}\left(\frac{1}{4}\sqrt{2}\left(-e^x+e^{-x}\right)\right) e^{\frac{1}{8}\left(e^{4x}+8xe^{2x}+1\right)e^{-2x}} - \sqrt{2}\, e^{\frac{1}{4}+2x} + \sqrt{2}\, e^{\frac{1}{4}}\right) e^{-\frac{1}{8}\left(e^{4x}+8xe^{2x}+1\right)e^{-2x}}\right)$$

"IDF(x)", $\left[\left[s \rightarrow RootOf\left(e^{4\_Z} + 4\,e^{2\_Z}\ln(2) + 4\,e^{2\_Z}\ln(\pi) + 4\,e^{2\_Z}\ln\left(\frac{\left(-s + \mathrm{erf}\left(\frac{1}{4}\sqrt{2}\,\left(e^{\_Z} - e^{-\_Z}\right)\right)\right)^2}{\left(e^{2\_Z} - 1\right)^2}\right) + 8\,\_Z\,e^{2\_Z} - 2\,e^{2\_Z} + 1\right)\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\right]$

"S(x)", $\frac{1}{2}\,\frac{1}{\sqrt{\pi}}\left(\sqrt{2}\,e^{-\frac{1}{8}\left(e^{4x} - 8\,x\,e^{2x} - 2\,e^{2x} + 1\right)e^{-2x}} - \sqrt{2}\,e^{-\frac{1}{8}\left(e^{4x} + 8\,x\,e^{2x} - 2\,e^{2x} + 1\right)e^{-2x}} - 2\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{4}\sqrt{2}\,\left(e^{x} - e^{-x}\right)\right) + 2\sqrt{\pi}\right)$

"h(x)", $-\left(2\sinh(x)^2\,e^{-\frac{1}{2}\sinh(x)^2}\,\sqrt{2}\,\cosh(x)\right) \Big/ \left(\sqrt{2}\,e^{-\frac{1}{8}\left(e^{4x} + 8\,x\,e^{2x} - 2\,e^{2x} + 1\right)e^{-2x}} - \sqrt{2}\,e^{-\frac{1}{8}\left(e^{4x} - 8\,x\,e^{2x} - 2\,e^{2x} + 1\right)e^{-2x}} - 2\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{4}\sqrt{2}\,\left(-e^{x} + e^{-x}\right)\right) - 2\sqrt{\pi}\right)$

"mean and variance", $\int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)}\,\sinh(x)^2\cosh(x)\,\sqrt{2}\,x}{\sqrt{\pi}}\,dx,$

$\int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)}\,\sinh(x)^2\cosh(x)\,\sqrt{2}\,x^2}{\sqrt{\pi}}\,dx - \left(\int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)}\,\sinh(x)^2\cosh(x)\,\sqrt{2}\,x}{\sqrt{\pi}}\,dx\right)^2$

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

"MGF", $\int_0^{\infty} \frac{e^{tx + \frac{1}{4} - \frac{1}{4}\cosh(2x)}\,\sinh(x)^2\cosh(x)\,\sqrt{2}}{\sqrt{\pi}}\,dx$

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

```
 \left( \sinh \left( x \right)  \right) ^{2}}}\sqrt {2}\cosh
\left( x
 \right) }{\sqrt {\pi}}}
```
"i is", 14,

" --"

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

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

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

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

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

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

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

$$\frac{1}{\pi^{3/2}}\left(\sqrt{2}\left(\int_0^{\frac{2e}{e^2-1}} \frac{x(-1+\operatorname{arccsch}(x))^2 e^{-\frac{1}{2}(-1+\operatorname{arccsch}(x))^2}}{\sqrt{x^2+1}}\,dx\right)\pi - 2\left(\int_0^{\frac{2e}{e^2-1}} \frac{(-1+\operatorname{arccsch}(x))^2 e^{-\frac{1}{2}(-1+\operatorname{arccsch}(x))^2}}{\sqrt{x^2+1}}\,dx\right)^2\sqrt{\pi}\right)$$

$$"MF", \int_0^{\frac{2}{e-e^{-1}}} \frac{x^{r\sim}(-1+\operatorname{arccsch}(x))^2 e^{-\frac{1}{2}(-1+\operatorname{arccsch}(x))^2}\sqrt{2}}{\sqrt{\pi}\sqrt{x^2+1}\,|x|}\,dx$$

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

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

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*, $\frac{2}{e-e^{-1}}$

Resetting high to RV's maximum support value

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

```
}{\sqrt {\pi}\sqrt {{x}^{2}+1} \left| x \right| }}
```

"i is", 15,

" --"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow -\frac{\sqrt{2}\left(-\cosh(y\sim)^2+2\sinh(y\sim)\right)\mathrm{e}^{-\frac{1}{2}\frac{(\sinh(y\sim)-1)^2}{\sinh(y\sim)^2}}\cosh(y\sim)}{\sqrt{\pi}\sinh(y\sim)^4}\right], \left[0, \ln\left(1+\sqrt{2}\right)\right], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

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

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

$$\text{"F(x)"}, -\frac{\sqrt{2}\left(\int_0^x \frac{\left(-\cosh(t)^2+2\sinh(t)\right)\mathrm{e}^{-\frac{1}{2}\frac{(\sinh(t)-1)^2}{\sinh(t)^2}}\cosh(t)}{\sinh(t)^4}\,\mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, \frac{\sqrt{2}\left(\int_0^x \frac{\left(-\cosh(t)^2+2\sinh(t)\right)\mathrm{e}^{-\frac{1}{2}\frac{(\sinh(t)-1)^2}{\sinh(t)^2}}\cosh(t)}{\sinh(t)^4}\,\mathrm{d}t\right)+\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, \frac{\sqrt{2}\left(-\cosh(x)^2+2\sinh(x)\right)\mathrm{e}^{-\frac{1}{2}\frac{(\sinh(x)-1)^2}{\sinh(x)^2}}\cosh(x)}{\sinh(x)^4\left(\sqrt{2}\left(\int_0^x \frac{\left(\cosh(t)^2-2\sinh(t)\right)\mathrm{e}^{-\frac{1}{2}\frac{(\sinh(t)-1)^2}{\sinh(t)^2}}\cosh(t)}{\sinh(t)^4}\,\mathrm{d}t\right)-\sqrt{\pi}\right)}$$

"mean and variance",

$$-\frac{4\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{e^{\frac{-\cosh(x)^2+2\sinh(x)}{-1+\cosh(2x)}}\cosh(x)\,(-\cosh(x)^2+2\sinh(x))\,x}{(-1+\cosh(2x))^2}\,dx\right)}{\sqrt{\pi}},$$

$$\frac{1}{\pi^{3/2}}\left(4\left(\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{e^{\frac{-\cosh(x)^2+2\sinh(x)}{-1+\cosh(2x)}}\cosh(x)\,(\cosh(x)^2-2\sinh(x))\,x^2}{(-1+\cosh(2x))^2}\,dx\right)\pi\right.\right.$$
$$\left.\left.-8\left(\int_0^{\ln(1+\sqrt{2})}\frac{e^{\frac{-\cosh(x)^2+2\sinh(x)}{-1+\cosh(2x)}}\cosh(x)\,(-\cosh(x)^2+2\sinh(x))\,x}{(-1+\cosh(2x))^2}\,dx\right)^2\sqrt{\pi}\right)\right)$$

$$\text{"MF"},\ \int_0^{\ln(1+\sqrt{2})}\left(-\frac{x^{r\sim}\sqrt{2}\,(-\cosh(x)^2+2\sinh(x))\,e^{-\frac{1}{2}\frac{(\sinh(x)-1)^2}{\sinh(x)^2}}\cosh(x)}{\sqrt{\pi}\,\sinh(x)^4}\right)dx$$

"MGF",

$$\frac{1}{\sqrt{\pi}}\left(4\sqrt{2}\left(\int_0^{\ln(1+\sqrt{2})}\frac{e^{\frac{2\cosh(x)^2 t x-\cosh(x)^2-2tx+2\sinh(x)}{-1+\cosh(2x)}}\cosh(x)\,(\cosh(x)^2-2\sinh(x))}{(-1+\cosh(2x))^2}\,dx\right)\right)$$

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

```
-{\frac {\sqrt {2} \left( - \left( \cosh \left( x \right)
\right) ^{2
}+2\,\sinh \left( x \right)  \right) \cosh \left( x \right) }
{\sqrt {
\pi} \left( \sinh \left( x \right)  \right) ^{4}}{{\rm e}^
{-1/2\,{
\frac { \left( \sinh \left( x \right) -1 \right) ^{2}}{ \left(
\sinh
 \left( x \right)  \right) ^{2}}}}}}
```

"i is", 16,

" ---

----------"

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

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

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

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

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

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

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
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

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

"i is", 17,

" --"

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

$$l := 0$$

$$u := \infty$$

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

$$\left. ["Continuous", "PDF"] \right]$$

"l and u", 0, ∞

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

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

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

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

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

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

$$+ e^{\frac{1}{2} \ln\left(\sqrt{x^2+1} + 1\right)^2 + \frac{1}{2} \ln(x)^2} x \sqrt{\pi} - x^{\ln\left(\sqrt{x^2+1} + 1\right)} \sqrt{2}\, e^{-\frac{1}{2}} \Big)$$

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

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

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

$$+ 1\Big)^{\ln(x)} - \sqrt{2}\, e^{-\frac{1}{2} - \frac{1}{2} \ln\left(\sqrt{x^2+1} + 1\right)^2 - \frac{1}{2} \ln(x)^2} \sqrt{x^2+1} \ln(x) \left(\sqrt{x^2+1} + 1\right)^{\ln(x)}$$

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

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

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

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

$$- \sqrt{2}\, e^{-\frac{1}{2} - \frac{1}{2} \ln\left(\sqrt{x^2+1} + 1\right)^2 - \frac{1}{2} \ln(x)^2} \left(\sqrt{x^2+1} + 1\right)^{\ln(x)} \Big)$$

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

$$\Big(\sqrt{x^2+1}\, |x| \Big(\sqrt{2}\, e^{-\frac{1}{2} - \frac{1}{2} \ln\left(\sqrt{x^2+1} + 1\right)^2 - \frac{1}{2} \ln(x)^2} x^{\ln\left(\sqrt{x^2+1} + 1\right)} \ln\Big(\sqrt{x^2+1}$$

$$+ 1\Big) \sqrt{x^2+1} - \sqrt{2}\, e^{-\frac{1}{2} - \frac{1}{2} \ln\left(\sqrt{x^2+1} + 1\right)^2 - \frac{1}{2} \ln(x)^2} x^{\ln\left(\sqrt{x^2+1} + 1\right)} \ln(x) \sqrt{x^2+1}$$

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

$$-\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}-\frac{1}{2}\ln\left(\sqrt{x^2+1}+1\right)^2-\frac{1}{2}\ln(x)^2}\,x^{\ln\left(\sqrt{x^2+1}+1\right)}\ln(x)$$

$$-\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}-\frac{1}{2}\ln\left(\sqrt{x^2+1}+1\right)^2-\frac{1}{2}\ln(x)^2}\,x^{\ln\left(\sqrt{x^2+1}+1\right)}\sqrt{x^2+1}$$

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

$$-\sqrt{2}\,\mathrm{e}^{-\frac{1}{2}-\frac{1}{2}\ln\left(\sqrt{x^2+1}+1\right)^2-\frac{1}{2}\ln(x)^2}\,x^{\ln\left(\sqrt{x^2+1}+1\right)}\Bigg)\Bigg)$$

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

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

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

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

$$\text{"MGF"}, \frac{\sqrt{2}\left(\int_{0}^{\frac{2\,e}{e^2-1}} \frac{\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2 e^{-\frac{1}{2}\operatorname{arcsinh}\left(\frac{1}{x}\right)^2+t\,x+\operatorname{arcsinh}\left(\frac{1}{x}\right)-\frac{1}{2}}}{x\sqrt{x^2+1}}\,dx\right)}{\sqrt{\pi}}$$

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

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,* $\frac{2}{e-e^{-1}}$

Resetting high to RV's maximum support value

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

"i is", 18,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

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

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

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

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

$$\int_1^\infty \frac{x^2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2 e^{-\frac{1}{2}\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}\sqrt{2}}{\sqrt{\pi}\sqrt{x^2-2x+2}}\,dx$$

$$-\left(\int_1^\infty \frac{x\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2 e^{-\frac{1}{2}\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}\sqrt{2}}{\sqrt{\pi}\sqrt{x^2-2x+2}}\,dx\right)^2$$

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

$$"MGF", \int_1^\infty \frac{\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2\sqrt{2}\, e^{tx-\frac{1}{2}\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}}{\sqrt{\pi}\sqrt{x^2-2x+2}}\,dx$$

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

```
{\frac { \left( {\rm arccsch} \left( \left( x-1 \right) ^{-1}
\right)
```

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

"i is", 20,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

$$\text{"F(x)"}, -\frac{\sqrt{2}\left(\int_0^x \frac{e^{-\frac{1}{2\operatorname{arctanh}(t)^2}}}{\operatorname{arctanh}(t)^4\,(t^2-1)}\,dt\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, \frac{\sqrt{2}\left(\int_0^x \frac{e^{-\frac{1}{2\operatorname{arctanh}(t)^2}}}{\operatorname{arctanh}(t)^4\,(t^2-1)}\,dt\right)+\sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{e^{-\frac{1}{2\operatorname{arctanh}(x)^2}}\sqrt{2}}{\operatorname{arctanh}(x)^4\,(x^2-1)\left(\sqrt{2}\left(\int_0^x \frac{e^{-\frac{1}{2\operatorname{arctanh}(t)^2}}}{\operatorname{arctanh}(t)^4\,(t^2-1)}\,dt\right)+\sqrt{\pi}\right)}$$

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

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

$$\text{"MF"},\ \int_0^1 \left(-\frac{x^{r\sim}\,\mathrm{e}^{-\frac{1}{2\,\operatorname{arctanh}(x)^2}}\sqrt{2}}{\operatorname{arctanh}(x)^4\sqrt{\pi}\,(x^2-1)}\right)\mathrm{d}x$$

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

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

```
-{\frac {\sqrt {2}}{ \left( {\rm arctanh} \left(x\right) \right)
^{4}
\sqrt {\pi} \left( {x}^{2}-1 \right) }{{\rm e}^{-1/2\, \left(
{\rm arctanh} \left(x\right) \right) ^{-2}}}}
```

"i is", 21,

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

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

$$l := 0$$

$$u := \infty$$

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

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

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

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

$$\text{"F(x)"}, \frac{\sqrt{2} \left(\int_0^x \frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(t)^2}}}{\sqrt{t^2+1} \operatorname{arccsch}(t)^4 |t|} \, \mathrm{d}t\right)}{\sqrt{\pi}}$$

$$\text{"S(x)"}, -\frac{\sqrt{2} \left(\int_0^x \frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(t)^2}}}{\sqrt{t^2+1} \operatorname{arccsch}(t)^4 |t|} \, \mathrm{d}t\right) - \sqrt{\pi}}{\sqrt{\pi}}$$

$$\text{"h(x)"}, -\frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(x)^2}} \sqrt{2}}{\sqrt{x^2+1} \operatorname{arccsch}(x)^4 |x| \left(\sqrt{2} \left(\int_0^x \frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(t)^2}}}{\sqrt{t^2+1} \operatorname{arccsch}(t)^4 |t|} \, \mathrm{d}t\right) - \sqrt{\pi}\right)}$$

$$\text{"mean and variance"}, \int_0^\infty \frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(x)^2}} \sqrt{2}}{\sqrt{\pi} \sqrt{x^2+1} \operatorname{arccsch}(x)^4} \, \mathrm{d}x, \int_0^\infty \frac{x \, \mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(x)^2}} \sqrt{2}}{\sqrt{\pi} \sqrt{x^2+1} \operatorname{arccsch}(x)^4} \, \mathrm{d}x$$

$$- \left(\int_0^\infty \frac{\mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(x)^2}} \sqrt{2}}{\sqrt{\pi} \sqrt{x^2+1} \operatorname{arccsch}(x)^4} \, \mathrm{d}x\right)^2$$

$$\text{"MF"}, \int_0^\infty \frac{x^{r\sim} \mathrm{e}^{-\frac{1}{2 \operatorname{arccsch}(x)^2}} \sqrt{2}}{\sqrt{\pi} \sqrt{x^2+1} \operatorname{arccsch}(x)^4 |x|} \, \mathrm{d}x$$

$$"MGF", \int_0^\infty \frac{e^{\frac{1}{2}\frac{2\,t\,x\,\mathrm{arccsch}(x)^2-1}{\mathrm{arccsch}(x)^2}}\sqrt{2}}{\mathrm{arccsch}(x)^4\,x\sqrt{x^2+1}\,\sqrt{\pi}}\,dx$$

```
{\frac {\sqrt {2}}{\sqrt {\pi}\sqrt {{x}^{2}+1} \left( {\rm
arccsch}
\left(x\right) \right) ^{4} \left| x \right| }{{\rm e}^{-1/2\,
\left(
{\rm arccsch} \left(x\right) \right) ^{-2}}}}
```

"i is", 22,

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

$$g := t \to \mathrm{arccsch}\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

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

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

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

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

$$"F(x)", \frac{1}{2}\,\frac{1}{\sqrt{\pi}}\left(\left(-2\sqrt{\pi}\,\mathrm{erf}\left(\frac{1}{4}\sqrt{2}\,(-e^{x}+e^{-x})\right)e^{\frac{1}{8}(e^{4x}+8\,x\,e^{2x}+1)\,e^{-2x}}-\sqrt{2}\,e^{\frac{1}{4}+2x}\right.\right.$$
$$\left.\left.+\sqrt{2}\,e^{\frac{1}{4}}\right)e^{-\frac{1}{8}(e^{4x}+8\,x\,e^{2x}+1)\,e^{-2x}}\right)$$

$$"IDF(x)", \left[\left[s \to RootOf\left(e^{4\_Z}+4\,e^{2\_Z}\ln(2)+4\,e^{2\_Z}\ln(\pi)\right.\right.\right.$$
$$\left.\left.+4\,e^{2\_Z}\ln\left(\frac{\left(-s+\mathrm{erf}\left(\frac{1}{4}\sqrt{2}\,(e^{\_Z}-e^{-\_Z})\right)\right)^2}{(e^{2\_Z}-1)^2}\right)+8\,\_Z\,e^{2\_Z}-2\,e^{2\_Z}+1\right)\right], [0, 1],$$
$$\left.["Continuous", "IDF"]\right]$$

$$"S(x)", \frac{1}{2} \frac{1}{\sqrt{\pi}} \left(-2\sqrt{\pi}\, \mathrm{erf}\left(\frac{1}{4}\sqrt{2}\, (e^{x} - e^{-x}) \right) - \sqrt{2}\, e^{-\frac{1}{8} (e^{4x} + 8 x e^{2x} - 2 e^{2x} + 1) e^{-2x}} + \sqrt{2}\, e^{\frac{1}{8} (-e^{4x} + 8 x e^{2x} + 2 e^{2x} - 1) e^{-2x}} + 2\sqrt{\pi} \right)$$

$$"h(x)", \left(2 \sinh(x)^2 e^{-\frac{1}{2}\sinh(x)^2} \sqrt{2} \cosh(x)\right) \Big/ \left(\sqrt{2}\, e^{-\frac{1}{8} (e^{4x} - 8 x e^{2x} - 2 e^{2x} + 1) e^{-2x}} - \sqrt{2}\, e^{-\frac{1}{8} (e^{4x} + 8 x e^{2x} - 2 e^{2x} + 1) e^{-2x}} + 2\sqrt{\pi}\, \mathrm{erf}\left(\frac{1}{4}\sqrt{2}\, (-e^{x} + e^{-x}) \right) + 2\sqrt{\pi} \right)$$

$$"mean and variance", \int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)} \sinh(x)^2 \cosh(x) \sqrt{2}\, x}{\sqrt{\pi}} \, dx,$$

$$\int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)} \sinh(x)^2 \cosh(x) \sqrt{2}\, x^2}{\sqrt{\pi}} \, dx - \left(\int_0^{\infty} \frac{e^{\frac{1}{4} - \frac{1}{4}\cosh(2x)} \sinh(x)^2 \cosh(x) \sqrt{2}\, x}{\sqrt{\pi}} \, dx \right)^2$$

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

$$"MGF", \int_0^{\infty} \frac{e^{t x + \frac{1}{4} - \frac{1}{4}\cosh(2x)} \sinh(x)^2 \cosh(x) \sqrt{2}}{\sqrt{\pi}} \, dx$$

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