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

$$2\,3^{x}\,e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$$

"i is", 1,

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

$$g := t \to t^{2}$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{3^{\sqrt{y\sim}}\,e^{-\frac{2\left(3\sqrt{y\sim}-1\right)}{\ln(3)}}}{\sqrt{y\sim}}\right], [0,\ \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

"g(x)", x^{2}, "base", $2\,3^{x}\,e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

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

$$\text{"F(x)"},\ 1-e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}$$

$$\text{"IDF(x)"},\ \left[\left[s \to \frac{\left(-\ln(2)+\ln\left(-\ln(1-s)\ln(3)+2\right)\right)^{2}}{\ln(3)^{2}}\right], [0,\ 1], [\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"},\ \frac{3^{\sqrt{x}}}{\sqrt{x}}$$

$$\text{"mean and variance"},\ \int_{0}^{\infty}\sqrt{x}\,3^{\sqrt{x}}\,e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}\,dx,\ \int_{0}^{\infty}x^{3/2}\,3^{\sqrt{x}}\,e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}\,dx$$

$$-\left(\int_{0}^{\infty}\sqrt{x}\,3^{\sqrt{x}}\,e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}\,dx\right)^{2}$$

$$\text{"MF"},\ \int_{0}^{\infty}\frac{x^{r\sim}\,3^{\sqrt{x}}\,e^{-\frac{2\left(3\sqrt{x}-1\right)}{\ln(3)}}}{\sqrt{x}}\,dx$$

$$\text{"MGF"}, \int_0^{\infty} \frac{3^{\sqrt{x}}\, e^{-\frac{-t x \ln(3) + 2\, 3^{\sqrt{x}} - 2}{\ln(3)}}}{\sqrt{x}}\, dx$$

```
{\frac {{3}^{\sqrt {x}}}{\sqrt {x}}{{\rm e}^{-2\,{\frac {{3}^
{\sqrt {x
}}-1}{\ln  \left( 3 \right) }}}}}
```

"i is", 2,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 4\, 3^{y\sim^2}\, e^{-\frac{2\left(3^{y\sim^2}-1\right)}{\ln(3)}}\, y\sim \right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}] \right]$$

"l and u", 0, ∞

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

$$\text{"f(x)"}, 4\, 3^{x^2}\, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}\, x$$

$$\text{"F(x)"}, 1 - e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}$$

$$\text{"IDF(x)"}, \left[\left[s \to RootOf\left(\ln(1-s)\, \ln(3) + 2\, 3^{-Z^2} - 2 \right) \right], [0, 1], [\text{"Continuous"}, \text{"IDF"}] \right]$$

$$\text{"S(x)"}, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"}, 4\, 3^{x^2}\, x$$

$$\text{"mean and variance"}, \int_0^{\infty} 4\, x^2\, 3^{x^2}\, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}\, dx, \int_0^{\infty} 4\, x^3\, 3^{x^2}\, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}\, dx$$

$$- \left(\int_0^{\infty} 4\, x^2\, 3^{x^2}\, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}\, dx \right)^2$$

$$\text{"MF"}, \int_0^{\infty} 4\, x^{r\sim}\, 3^{x^2}\, x\, e^{-\frac{2\left(3^{x^2}-1\right)}{\ln(3)}}\, dx$$

$$\text{"MGF"}, \int_0^{\infty} 4\, 3^{x^2}\, x\, e^{-\frac{-t x \ln(3) + 2\, 3^{x^2} - 2}{\ln(3)}}\, dx$$

```
4\,{3}^{{x}^{2}}{{\rm e}^{-2\,{\frac {{3}^{{x}^{2}}-1}{\ln
\left( 3
 \right) }}}}x
```

"i is", 3,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\, 3^{\frac{1}{y\sim}}\, e^{-\frac{2\left(3^{\frac{1}{y\sim}}-1\right)}{\ln(3)}}}{y\sim^2} \right], [0, \infty], ["Continuous", "PDF"] \right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{x}$, "base", $2\, 3^x\, e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $\frac{2\, 3^{\frac{1}{x}}\, e^{-\frac{2\left(3^{\frac{1}{x}}-1\right)}{\ln(3)}}}{x^2}$

"F(x)", $e^{-\frac{2\left(3^{\frac{1}{x}}-1\right)}{\ln(3)}}$

"IDF(x)", $\left[\left[s \to \frac{\ln(3)}{-\ln(2)+\ln(-\ln(s)\ln(3)+2)} \right], [0, 1], ["Continuous", "IDF"] \right]$

"S(x)", $1 - e^{-\frac{2\left(3^{\frac{1}{x}}-1\right)}{\ln(3)}}$

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

"mean and variance", ∞, *undefined*

"MF", $\int_0^{\infty} \frac{2\, x^{r\sim}\, 3^{\frac{1}{x}}\, e^{-\frac{2\left(3^{\frac{1}{x}}-1\right)}{\ln(3)}}}{x^2}\, dx$

$$\text{"MGF"}, \int_0^{\infty} \frac{2\,3^{\frac{1}{x}}\, e^{\frac{t x \ln(3) - 2\,3^{\frac{1}{x}} + 2}{\ln(3)}}}{x^2}\, dx$$

```
2\,{\frac {\sqrt [x]{3}}{{x}^{2}}{{\rm e}^{-2\,{\frac {\sqrt [x]
{3}-1
}{\ln  \left( 3 \right) }}}}}
```

"i is", 4,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\,3^{\tan(y\sim)}\, e^{-\frac{2\left(3^{\tan(y\sim)} - 1\right)}{\ln(3)}} \left(1 + \tan(y\sim)^2\right) \right], \left[0, \frac{1}{2}\,\pi\right], \left["\text{Continuous}", "\text{PDF}"\right] \right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, \arctan(x), \text{"base"}, 2\,3^x\, e^{-\frac{2\left(3^x - 1\right)}{\ln(3)}}, \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"}, 2\,3^{\tan(x)}\, e^{-\frac{2\left(3^{\tan(x)} - 1\right)}{\ln(3)}} \left(1 + \tan(x)^2\right)$$

$$\text{"F(x)"}, \begin{cases} 1 - e^{-\frac{2\left(3^{\tan(x)} - 1\right)}{\ln(3)}} & x \le \frac{1}{2}\,\pi \\ e^{\frac{2}{\ln(3)}}\, \text{floor}\left(-\frac{1}{2}\,\frac{-2x + \pi}{\pi}\right) - e^{-\frac{2\left(3^{\tan(x)} - 1\right)}{\ln(3)}} + e^{\frac{2}{\ln(3)}} + 1 & \frac{1}{2}\,\pi < x \end{cases}$$

$$\text{"IDF(x)"}, \left[\left[s \to RootOf\left(-e^{\frac{2}{\ln(3)}}\, \text{floor}\left(-\frac{1}{2}\,\frac{-2\_Z + \pi}{\pi}\right) + e^{-\frac{2\left(3^{\tan(\_Z)} - 1\right)}{\ln(3)}} - e^{\frac{2}{\ln(3)}} - 1 + s \right) \right], [0, 1], \left["\text{Continuous}", "\text{IDF}"\right] \right]$$

$$\text{"S(x)"}, \begin{cases} e^{-\frac{2\left(3^{\tan(x)} - 1\right)}{\ln(3)}} & x \le \frac{1}{2}\,\pi \\ -e^{\frac{2}{\ln(3)}}\, \text{floor}\left(-\frac{1}{2}\,\frac{-2x + \pi}{\pi}\right) + e^{-\frac{2\left(3^{\tan(x)} - 1\right)}{\ln(3)}} - e^{\frac{2}{\ln(3)}} & \frac{1}{2}\,\pi < x \end{cases}$$

"h(x)", $\begin{cases} 2\,3^{\tan(x)}\left(1+\tan(x)^2\right) & x \le \frac{1}{2}\,\pi \\ -\dfrac{2\,3^{\tan(x)}\,e^{-\frac{2\left(3^{\tan(x)}-1\right)}{\ln(3)}}\left(1+\tan(x)^2\right)}{e^{\frac{2}{\ln(3)}}\,\mathrm{floor}\left(-\frac{1}{2}\,\frac{-2x+\pi}{\pi}\right)+e^{\frac{2}{\ln(3)}}-e^{-\frac{2\left(3^{\tan(x)}-1\right)}{\ln(3)}}} & \frac{1}{2}\,\pi < x \end{cases}$

"mean and variance", $2\left(\int_0^{\frac{1}{2}\pi} \frac{e^{-\frac{2\left(\frac{\sin(x)}{3\cos(x)}-1\right)}{\ln(3)}}\,3^{\frac{\sin(x)}{\cos(x)}}\,x}{\cos(x)^2}\,dx\right), 2\left(\int_0^{\frac{1}{2}\pi} \frac{e^{-\frac{2\left(\frac{\sin(x)}{3\cos(x)}-1\right)}{\ln(3)}}\,3^{\frac{\sin(x)}{\cos(x)}}\,x^2}{\cos(x)^2}\,dx\right) - 4\left(\int_0^{\frac{1}{2}\pi} \frac{e^{-\frac{2\left(\frac{\sin(x)}{3\cos(x)}-1\right)}{\ln(3)}}\,3^{\frac{\sin(x)}{\cos(x)}}\,x}{\cos(x)^2}\,dx\right)^2$

"MF", $\int_0^{\frac{1}{2}\pi} 2\,x^{r\sim}\,3^{\tan(x)}\,e^{-\frac{2\left(3^{\tan(x)}-1\right)}{\ln(3)}}\left(1+\tan(x)^2\right)\,dx$

"MGF", $2\left(\int_0^{\frac{1}{2}\pi} \frac{e^{\frac{t\,x\ln(3)-2\,3^{\frac{\sin(x)}{\cos(x)}}+2}{\ln(3)}}\,3^{\frac{\sin(x)}{\cos(x)}}}{\cos(x)^2}\,dx\right)$

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

```
2\,{3}^{\tan \left( x \right) }{{\rm e}^{-2\,{\frac {{3}^{\tan
\left(
x \right) }-1}{\ln  \left( 3 \right) }}}} \left( 1+ \left( \tan
 \left( x \right)  \right) ^{2} \right)
```

"i is", 5,

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

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

"g(x)", e^{x}, "base", $2\, 3^{x}\, e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $2\, x^{\ln(3)-1}\, e^{-\frac{2\left(x^{\ln(3)}-1\right)}{\ln(3)}}$

"F(x)", $1 - e^{-\frac{2\left(x^{\ln(3)}-1\right)}{\ln(3)}}$

"IDF(x)", $\left[\left[s \to e^{\frac{-\ln(2)+\ln(-\ln(1-s)\ln(3)+2)}{\ln(3)}}\right], [0, 1], ["Continuous", "IDF"]\right]$

"S(x)", $e^{-\frac{2\left(x^{\ln(3)}-1\right)}{\ln(3)}}$

"h(x)", $2\, x^{\ln(3)-1}$

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

$$-\left(\int_{1}^{\infty} 2\, x^{\ln(3)}\, e^{-\frac{2\left(x^{\ln(3)}-1\right)}{\ln(3)}}\, dx\right)^{2}$$

"MF", $\int_{1}^{\infty} 2\, x^{r\sim}\, x^{\ln(3)-1}\, e^{-\frac{2\left(x^{\ln(3)}-1\right)}{\ln(3)}}\, dx$

"MGF", $\int_{1}^{\infty} 2\, x^{\ln(3)-1}\, e^{\frac{t\, x^{\ln(3)}\ln(3)-2x^{\ln(3)}+2}{\ln(3)}}\, dx$

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

```
2\,{x}^{\ln  \left( 3 \right) -1}{{\rm e}^{-2\,{\frac {{x}^{\ln
 \left( 3 \right) }-1}{\ln  \left( 3 \right) }}}}
```

"i is", 6,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\ 3^{e^{y\sim}}\ e^{\frac{y\sim \ln(3) - 2\ 3^{e^{y\sim}} + 2}{\ln(3)}}\right], [-\infty, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\ln(x)$, "base", $2\ 3^{x}\ e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $2\ 3^{e^{x}}\ e^{\frac{x\ln(3) - 2\ 3^{e^{x}} + 2}{\ln(3)}}$

"F(x)", $-e^{-\frac{2\left(3^{e^{x}}-1\right)}{\ln(3)}} + 1$

"IDF(x)", $[[s \to -\ln(\ln(3)) + \ln(-\ln(2) + \ln(-\ln(1-s)\ln(3) + 2))]$, [0, 1],
["Continuous", "IDF"]]

"S(x)", $e^{-\frac{2\left(3^{e^{x}}-1\right)}{\ln(3)}}$

"h(x)", $2\ 3^{e^{x}}\ e^{x}$

"i is", 7,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\ y\sim^{-1-\ln(3)}\ e^{-\frac{2\left(y\sim^{-\ln(3)}-1\right)}{\ln(3)}}\right], [0, 1], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", e^{-x}, "base", $2\ 3^{x}\ e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $2\ x^{-1-\ln(3)}\ e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}$

"F(x)", $e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}$

"IDF(x)", $\left[\left[s \to e^{-\frac{-\ln(2) + \ln(-\ln(s)\ln(3) + 2)}{\ln(3)}}\right], [0, 1], ["Continuous", "IDF"]\right]$

"S(x)", $1 - e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}$

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

$$\text{"mean and variance"},\ 2\left(\int_0^1 x^{-\ln(3)}\,e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}\,dx\right),\ 2\left(\int_0^1 x^{-\ln(3)+1}\,e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}\,dx\right)$$
$$-4\left(\int_0^1 x^{-\ln(3)}\,e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}\,dx\right)^2$$

$$\text{"MF"},\ \int_0^1 2\,x^{r\sim}\,x^{-1-\ln(3)}\,e^{-\frac{2\left(x^{-\ln(3)}-1\right)}{\ln(3)}}\,dx$$

$$\text{"MGF"},\ 2\left(\int_0^1 x^{-1-\ln(3)}\,e^{\frac{t\,x\ln(3)-2\,x^{-\ln(3)}+2}{\ln(3)}}\,dx\right)$$

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

```
2\,{x}^{-1-\ln  \left( 3 \right) }{{\rm e}^{-2\,{\frac {{x}^{-
\ln
 \left( 3 \right) }-1}{\ln  \left( 3 \right) }}}}
```

"i is", 8,

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

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

$$Temp := \left[\left[y\sim \to 2\,3^{e^{-y\sim}}\,e^{-\frac{y\sim\ln(3)+2\,3^{e^{-y\sim}}-2}{\ln(3)}}\right], [-\infty, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"},\ -\ln(x),\ \text{"base"},\ 2\,3^x\,e^{-\frac{2\left(3^x-1\right)}{\ln(3)}},\ \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"},\ 2\,3^{e^{-x}}\,e^{-\frac{x\ln(3)+2\,3^{e^{-x}}-2}{\ln(3)}}$$

$$\text{"F(x)"},\ e^{-\frac{2\left(3e^{-x}-1\right)}{\ln(3)}}$$

"IDF(x)", [[$s \to \ln(\ln(3)) - \ln(-\ln(2) + \ln(-\ln(s)\ln(3) + 2))$]], [0, 1], ["Continuous", "IDF"]]

$$\text{"S(x)"},\ 1 - e^{-\frac{2\left(3e^{-x}-1\right)}{\ln(3)}}$$

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

"i is", 9,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\,3^{e^{y\sim}-1}\,e^{\frac{y\sim\ln(3)-2\,3^{e^{y\sim}-1}+2}{\ln(3)}}\right], [0, \infty], ["Continuous", "PDF"]\right]$$

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

$$\text{"g(x)"}, \ln(x+1), \text{"base"}, 2\,3^{x}\,e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}, \text{"GompertzRV(2,3)"}$$

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

$$\text{"F(x)"},\ -e^{-\frac{2\left(3e^{x-1}-1\right)}{\ln(3)}}+1$$

"IDF(x)", [[$s \to -\ln(\ln(3)) + \ln(\ln(3) - \ln(2) + \ln(-\ln(1-s)\ln(3) + 2))$]], [0, 1], ["Continuous", "IDF"]]

$$\text{"S(x)"},\ e^{-\frac{2\left(3e^{x-1}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"},\ 2\,3^{e^{x}-1}\,e^{x}$$

"i is", 10,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2}{9} \, \frac{3^{e^{\frac{1}{y\sim}}} \, e^{\frac{1}{9} \, \frac{-2\,y\sim 3^{e^{\frac{1}{y\sim}}} + 9\ln(3) + 18\,y\sim}{\ln(3)\,y\sim}}}{y\sim^2} \right], \left[0, \frac{1}{\ln(2)} \right], \left[\text{"Continuous"}, \text{"PDF"} \right] \right]$$

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

$$\text{"g(x)"}, \frac{1}{\ln(x+2)}, \text{"base"}, 2\,3^x e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}, \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"}, \frac{2}{9} \, \frac{3^{e^{\frac{1}{x}}} \, e^{\frac{1}{9} \, \frac{-2\,x 3^{e^{\frac{1}{x}}} + 9\ln(3) + 18\,x}{\ln(3)\,x}}}{x^2}$$

$$\text{"F(x)"}, e^{-\frac{2}{9} \, \frac{3^{e^{\frac{1}{x}}} - 9}{\ln(3)}}$$

$$\text{"IDF(x)"}, \left[\left[s \to \frac{1}{-\ln(\ln(3)) + \ln(2\ln(3) - \ln(2) + \ln(-\ln(s)\ln(3) + 2))} \right], [0, 1], \left[\text{"Continuous"}, \text{"IDF"} \right] \right]$$

$$\text{"S(x)"}, 1 - e^{-\frac{2}{9} \, \frac{3^{e^{\frac{1}{x}}} - 9}{\ln(3)}}$$

$$\text{"h(x)"}, -\frac{2}{9} \, \frac{3^{e^{\frac{1}{x}}} \, e^{\frac{1}{9} \, \frac{-2\,x 3^{e^{\frac{1}{x}}} + 9\ln(3) + 18\,x}{\ln(3)\,x}}}{x^2 \left(-1 + e^{-\frac{2}{9} \, \frac{3^{e^{\frac{1}{x}}} - 9}{\ln(3)}} \right)}$$

$$\text{"mean and variance"}, \frac{2}{9} \int_0^{\frac{1}{\ln(2)}} \frac{3^{e^{\frac{1}{x}}} \, e^{\frac{1}{9} \, \frac{-2\,x 3^{e^{\frac{1}{x}}} + 9\ln(3) + 18\,x}{\ln(3)\,x}}}{x} \, dx, \frac{2}{9} \int_0^{\frac{1}{\ln(2)}} 3^{e^{\frac{1}{x}}} \, e^{\frac{1}{9} \, \frac{-2\,x 3^{e^{\frac{1}{x}}} + 9\ln(3) + 18\,x}{\ln(3)\,x}} \, dx - \frac{4}{81} \left(\int_0^{\frac{1}{\ln(2)}} \frac{3^{e^{\frac{1}{x}}} \, e^{\frac{1}{9} \, \frac{-2\,x 3^{e^{\frac{1}{x}}} + 9\ln(3) + 18\,x}{\ln(3)\,x}}}{x} \, dx \right)^2$$

$$\text{"MF"}, \int_0^{\frac{1}{\ln(2)}} \frac{2}{9}\,\frac{x^{r\sim}\,3^{e^{\frac{1}{x}}}\,e^{\frac{1}{9}\,\frac{-2x3^{e^{\frac{1}{x}}}+9\ln(3)+18x}{\ln(3)\,x}}}{x^2}\,dx$$

$$\text{"MGF"}, \frac{2}{9}\int_0^{\frac{1}{\ln(2)}} \frac{3^{e^{\frac{1}{x}}}\,e^{\frac{1}{9}\,\frac{9tx^2\ln(3)-2x3^{e^{\frac{1}{x}}}+9\ln(3)+18x}{\ln(3)\,x}}}{x^2}\,dx$$

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

```
2/9\,{\frac {{3}^{{{\rm e}^{{x}^{-1}}}}}{{x}^{2}}{{\rm e}^{1/9\,
{
\frac {-2\,x{3}^{{{\rm e}^{{x}^{-1}}}}+9\,\ln  \left( 3 \right)
+18\,x
}{x\ln  \left( 3 \right) }}}}}
```

"i is", 11,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to -\frac{2\,3^{\operatorname{arctanh}(y\sim)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(y\sim)}-1\right)}{\ln(3)}}}{y\sim^2-1}\right], [0, 1], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

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

$$\text{"f(x)"}, -\frac{2\,3^{\operatorname{arctanh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(x)}-1\right)}{\ln(3)}}}{x^2-1}$$

$$\text{"F(x)"},\ -e^{-\frac{2\left((x+1)^{\frac{1}{2}\ln(3)}-\sqrt{(1-x)^{\ln(3)}}\right)}{\sqrt{(1-x)^{\ln(3)}}\ln(3)}}+1$$

$$\text{"IDF(x)"},\left[\left[s\to 4^{-\frac{1}{\ln(3)}}\left(-3^{\frac{1}{2}}\,RootOf\left(e^{\_Z}-2+e^{\frac{2\left(-\ln(2)+\ln\left(-3^{\frac{1}{2}}\,\_Z^{\ln(1-s)\ln(3)-2)}\right)\right)}{\ln(3)}}\right)^{\frac{2}{\ln(3)}}-1\right],[0,1],["\text{Continuous}","\text{IDF}"]\right]$$

$$\text{"S(x)"},e^{-\frac{2\left((x+1)^{\frac{1}{2}\ln(3)}-\sqrt{(1-x)^{\ln(3)}}\right)}{\sqrt{(1-x)^{\ln(3)}}\ln(3)}}$$

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

$$\text{"mean and variance"},-2\left(\int_0^1\frac{x\,3^{\operatorname{arctanh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(x)}-1\right)}{\ln(3)}}}{x^2-1}\,dx\right),-2\left(\int_0^1\frac{x^2\,3^{\operatorname{arctanh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(x)}-1\right)}{\ln(3)}}}{x^2-1}\,dx\right)-4\left(\int_0^1\frac{x\,3^{\operatorname{arctanh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(x)}-1\right)}{\ln(3)}}}{x^2-1}\,dx\right)^2$$

$$\text{"MF"},\int_0^1\left(-\frac{2\,x^{r\sim}\,3^{\operatorname{arctanh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arctanh}(x)}-1\right)}{\ln(3)}}}{x^2-1}\right)dx$$

$$\text{"MGF"},-2\left(\int_0^1\frac{3^{\operatorname{arctanh}(x)}\,e^{\frac{t\,x\ln(3)-2\,3^{\operatorname{arctanh}(x)}+2}{\ln(3)}}}{x^2-1}\,dx\right)$$

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

```
-2\,{\frac {{3}^{{\rm arctanh} \left(x\right)}}{{x}^{2}-1}{{\rm
e}^{-2
\,{\frac {{3}^{{\rm arctanh} \left(x\right)}-1}{\ln  \left( 3
\right)
}}}}}
```

"i is", 12,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\,3^{\operatorname{arcsinh}(y\sim)}\, e^{-\frac{2\left(3^{\operatorname{arcsinh}(y\sim)}-1\right)}{\ln(3)}}}{\sqrt{y\sim^2+1}}\right], [0, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\sinh(x)$, "base", $2\,3^x\, e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $\frac{2\,3^{\operatorname{arcsinh}(x)}\, e^{-\frac{2\left(3^{\operatorname{arcsinh}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}$

"F(x)", $-e^{-\frac{2\left(\left(-x+\sqrt{x^2+1}\right)^{-\ln(3)}-1\right)}{\ln(3)}}+1$

"IDF(x)", $\left[\left[s\to -\frac{1}{2}\, e^{\frac{\ln(2)-\ln(-\ln(1-s)\ln(3)+2)}{\ln(3)}}+\frac{1}{2}\, e^{-\frac{\ln(2)-\ln(-\ln(1-s)\ln(3)+2)}{\ln(3)}}\right], [0, 1],\right.$

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

"S(x)", $e^{-\frac{2\left(\left(-x+\sqrt{x^2+1}\right)^{-\ln(3)}-1\right)}{\ln(3)}}$

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

"mean and variance", $\int_0^{\infty} \frac{2\,x\,3^{\operatorname{arcsinh}(x)}\, e^{-\frac{2\left(3^{\operatorname{arcsinh}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\, dx$,

$$\int_0^{\infty} \frac{2\,x^2\,3^{\operatorname{arcsinh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arcsinh}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx-\left(\int_0^{\infty} \frac{2\,x\,3^{\operatorname{arcsinh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arcsinh}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right)^2$$

$$\text{"MF"},\int_0^{\infty} \frac{2\,x^{r\sim}\,3^{\operatorname{arcsinh}(x)}\,e^{-\frac{2\left(3^{\operatorname{arcsinh}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx$$

$$\text{"MGF"},\int_0^{\infty} \frac{2\,3^{\operatorname{arcsinh}(x)}\,e^{\frac{t\,x\ln(3)-2\,3^{\operatorname{arcsinh}(x)}+2}{\ln(3)}}}{\sqrt{x^2+1}}\,dx$$

```
2\,{\frac {{3}^{{\rm arcsinh} \left(x\right)}}{\sqrt {{x}^{2}+1}
}{
{\rm e}^{-2\,{\frac {{3}^{{\rm arcsinh} \left(x\right)}-1}{\ln
 \left( 3 \right) }}}}}
```

"i is", 13,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\,3^{\sinh(y\sim)}\,e^{-\frac{2\left(3^{\sinh(y\sim)}-1\right)}{\ln(3)}}\cosh(y\sim)\right],\,[0,\,\infty],\,[\text{"Continuous"},\,\text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"},\operatorname{arcsinh}(x),\text{"base"},2\,3^{x}\,e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}},\text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"},2\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)$$

$$\text{"F(x)"},-e^{-\frac{2\left(3\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}-1\right)}{\ln(3)}}+1$$

$$\text{"IDF(x)"},\left[\left[s\to -\ln(\ln(3))+\ln\left(-\ln(2)+\ln(-\ln(1-s)\ln(3)+2)+\sqrt{\ln(3)^2+\ln(2)^2-2\ln(2)\ln(-\ln(1-s)\ln(3)+2)+\ln(-\ln(1-s)\ln(3)+2)^2}\right)\right],\,[0,1],\,[\text{"Continuous"},\,\text{"IDF"}]\right]$$

$$\text{"S(x)"},e^{-\frac{2\left(3\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"},2\,3^{\sinh(x)}\,e^{\frac{2\left(-3^{\sinh(x)}+3\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}\right)}{\ln(3)}}\cosh(x)$$

"mean and variance", $\int_0^{\infty} 2\,x\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx$,

$$\int_0^{\infty} 2\,x^2\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx-\left(\int_0^{\infty} 2\,x\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx\right)^2$$

"MF", $\int_0^{\infty} 2\,x^{r\sim}\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx$

"MGF", $\int_0^{\infty} 2\,e^{\frac{t\,x\ln(3)-2\,3^{\sinh(x)}+2}{\ln(3)}}\,3^{\sinh(x)}\cosh(x)\,dx$

```
2\,{3}^{\sinh \left( x \right) }{{\rm e}^{-2\,{\frac {{3}^{\sinh
 \left( x \right) }-1}{\ln  \left( 3 \right) }}}}\cosh \left( x
 \right)
```

"i is", 14,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\,3^{-1+\operatorname{arccsch}(y\sim)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(y\sim)}-1\right)}{\ln(3)}}}{\sqrt{y\sim^2+1}\;|y\sim|}\right],\left[0,\frac{2}{e-e^{-1}}\right],\left["\text{Continuous}",\ "\text{PDF}"\right]\right]$$

"l and u", 0, ∞

"g(x)", $\operatorname{csch}(x+1)$, "base", $2\,3^x\,e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $\frac{2\,3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\;|x|}$

"F(x)", $2\left(\int_0^{x}\frac{3^{-1+\operatorname{arccsch}(t)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(t)}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\;|t|}\,dt\right)$

$$\text{"S(x)"},\ 1-2\left(\int_0^{x}\frac{3^{-1+\operatorname{arccsch}(t)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(t)}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ |t|}\,dt\right)$$

$$\text{"h(x)"},\ -\frac{2\,3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\ |x|\left(-1+2\left(\int_0^{x}\frac{3^{-1+\operatorname{arccsch}(t)}\,e^{-\frac{2}{3}\,\frac{3^{\operatorname{arccsch}(t)}-3}{\ln(3)}}}{\sqrt{t^2+1}\ |t|}\,dt\right)\right)}$$

$$\text{"mean and variance"},\ 2\left(\int_0^{\frac{2e}{e^2-1}}\frac{3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right),\ 2\left(\int_0^{\frac{2e}{e^2-1}}\frac{x\,3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right)-4\left(\int_0^{\frac{2e}{e^2-1}}\frac{3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2}{3}\,\frac{3^{\operatorname{arccsch}(x)}-3}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right)^2$$

$$\text{"MF"},\ \int_0^{\frac{2}{e-e^{-1}}}\frac{2\,x^{r\sim}\,3^{-1+\operatorname{arccsch}(x)}\,e^{-\frac{2\left(3^{-1+\operatorname{arccsch}(x)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\ |x|}\,dx$$

$$\text{"MGF"},\ 2\left(\int_0^{\frac{2e}{e^2-1}}\frac{3^{-1+\operatorname{arccsch}(x)}\,e^{\frac{t\,x\ln(3)-2\,3^{-1+\operatorname{arccsch}(x)}+2}{\ln(3)}}}{\sqrt{x^2+1}\ x}\,dx\right)$$

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

```
2\,{\frac {{3}^{-1+{\rm arccsch} \left(x\right)}}{\sqrt {{x}^{2}
+1}}
 \left| x \right| }{{\rm e}^{-2\,{\frac {{3}^{-1+{\rm arccsch}
\left(x
\right)}-1}{\ln  \left( 3 \right) }}}}}
```

"i is", 15,
" ----------"

$$g := t \to \operatorname{arccsch}(t+1)$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\,3^{-\frac{\sinh(y\sim)-1}{\sinh(y\sim)}}\, e^{-\frac{2\left(3^{-\frac{\sinh(y\sim)-1}{\sinh(y\sim)}}-1\right)}{\ln(3)}} \cosh(y\sim)}{\sinh(y\sim)^2}\right], [0, \ln(1+\sqrt{2})],\right.$$

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

"l and u", 0, ∞

"g(x)", $\operatorname{arccsch}(x+1)$, "base", $2\,3^x e^{-\frac{2(3^x-1)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $\frac{2\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\, e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}} \cosh(x)}{\sinh(x)^2}$

"F(x)", $e^{-\frac{2}{3}\frac{-3+9^{\frac{e^x}{e^{2x}-1}}}{\ln(3)}}$

"IDF(x)", $\left[\left[s \to \ln\left(\frac{1}{\ln(3)-\ln(2)+\ln(-\ln(s)\ln(3)+2)}\left(\ln(3)\right.\right.\right.$

$\left.+\left(2\ln(3)^2-2\ln(3)\ln(2)+\ln(2)^2+2\ln(-\ln(s)\ln(3)+2)\ln(3)-2\ln(\right.\right.$

$\left.\left.\left.-\ln(s)\ln(3)+2)\ln(2)+\ln(-\ln(s)\ln(3)+2)^2\right)^{1/2}\right)\right)\Big], [0,1], ["Continuous", "IDF"]\Big]$

"S(x)", $1 - e^{-\frac{2}{3}\frac{-3+9^{\frac{e^x}{e^{2x}-1}}}{\ln(3)}}$

$$\text{"h(x)"},\ -\frac{2\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\,e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}}\cosh(x)}{\sinh(x)^2\left(-1+e^{-\frac{2}{3}\frac{-3+9^{\frac{e^x}{e^{2x}-1}}}{\ln(3)}}\right)}$$

$$\text{"mean and variance"},\ 4\left(\int_0^{\ln\left(1+\sqrt{2}\right)}\frac{e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}}\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\,x}{-1+\cosh(2x)}\,dx\right),\ 4\left(\int_0^{\ln\left(1+\sqrt{2}\right)}\frac{e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}}\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\,x^2}{-1+\cosh(2x)}\,dx\right)-16\left(\int_0^{\ln\left(1+\sqrt{2}\right)}\frac{e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}}\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)\,x}{-1+\cosh(2x)}\,dx\right)^2$$

$$\text{"MF"},\int_0^{\ln\left(1+\sqrt{2}\right)}\frac{2\,x^{r\sim}\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\,e^{-\frac{2\left(3^{-\frac{\sinh(x)-1}{\sinh(x)}}-1\right)}{\ln(3)}}\cosh(x)}{\sinh(x)^2}\,dx$$

$$\text{"MGF"},\ 4\left(\int_0^{\ln\left(1+\sqrt{2}\right)}\frac{e^{\frac{t\,x\ln(3)-2\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}+2}{\ln(3)}}\,3^{-\frac{\sinh(x)-1}{\sinh(x)}}\cosh(x)}{-1+\cosh(2x)}\,dx\right)$$

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

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*, $\ln\left(1+\sqrt{2}\right)$

Resetting high to RV's maximum support value

```
2\,{\frac {\cosh \left( x \right) }{ \left( \sinh \left( x \right)
```

```
 \right) ^{2}}{3}^{-{\frac {\sinh \left( x \right) -1}{\sinh
\left( x
 \right) }}}{{\rm e}^{-2\,{\frac {1}{\ln  \left( 3 \right) }
\left( {3
}^{-{\frac {\sinh \left( x \right) -1}{\sinh \left( x \right) }}
}-1
 \right) }}}}
```

"i is", 16,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\,3^{-1+\operatorname{arctanh}\left(\frac{1}{y\sim}\right)}\, e^{-\frac{2\left(3^{-1+\operatorname{arctanh}\left(\frac{1}{y\sim}\right)}-1\right)}{\ln(3)}}}{y\sim^2-1} \right], \left[1, \frac{e+e^{-1}}{e-e^{-1}} \right], \left[\text{"Continuous"}, \text{"PDF"} \right] \right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\tanh(x+1)}$, "base", $2\,3^x\, e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

"f(x)", $\frac{2\,3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}\, e^{-\frac{2\left(3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{x^2-1}$

"F(x)", $e^{-\frac{2}{3}\frac{(x+1)^{\frac{1}{2}\ln(3)}\,(x-1)^{-\frac{1}{2}\ln(3)}-3}{\ln(3)}}$

"IDF(x)", $\left[\left[s \right.\right.$

$\to$

$$e^{\frac{1}{\ln(3)}\left(\ln(3)\ln\left(-\frac{1}{-1+e^{-\frac{2(\ln(3)-\ln(2)+\ln(-\ln(s)\ln(3)+2))}{\ln(3)}}}\right)+\ln(3)\ln(2)-2\ln(3)+2\ln(2)\right.}$$

$$-2\ln(-\ln(s)\ln(3)+2)\Bigg)+1\Bigg|,[0,1],["\text{Continuous}","\text{IDF}"]\Bigg]$$

$$"\text{S(x)}",1-e^{-\frac{2}{3}\frac{(x+1)^{\frac{1}{2}\ln(3)}}{(x-1)^{\frac{1}{2}\ln(3)}}-3}$$

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

$$"\text{mean and variance}",2\left(\int_1^{\frac{e^2+1}{e^2-1}}\frac{x\,3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}e^{-\frac{2\left(3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{x^2-1}\,dx\right),2\left(\int_1^{\frac{e^2+1}{e^2-1}}\frac{x^2\,3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}e^{-\frac{2\left(3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{x^2-1}\,dx\right)-4\left(\int_1^{\frac{e^2+1}{e^2-1}}\frac{3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}e^{-\frac{2}{3}\frac{3^{\operatorname{arctanh}\left(\frac{1}{x}\right)}-3}{\ln(3)}}x}{x^2-1}\,dx\right)^2$$

$$"\text{MF}",\int_1^{\frac{e+e^{-1}}{e-e^{-1}}}\frac{2\,x^{r\sim}\,3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}e^{-\frac{2\left(3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{x^2-1}\,dx$$

$$"\text{MGF}",2\left(\int_1^{\frac{e^2+1}{e^2-1}}\frac{3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}e^{\frac{t\,x\ln(3)-2\,3^{-1+\operatorname{arctanh}\left(\frac{1}{x}\right)}+2}{\ln(3)}}}{x^2-1}\,dx\right)$$

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

```
2\,{\frac {{3}^{-1+{\rm arctanh} \left({x}^{-1}\right)}}{{x}^{2}
-1}{
{\rm e}^{-2\,{\frac {{3}^{-1+{\rm arctanh} \left({x}^{-1}\right)
}-1}{
\ln  \left( 3 \right) }}}}}
```

"i is", 17,
" ----------"

$$g := t \to \frac{1}{\sinh(t+1)}$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{y\sim}\right)}\, e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{y\sim}\right)}-1\right)}{\ln(3)}}}{\sqrt{y\sim^2+1}\ |y\sim|}\right], \left[0, \frac{2}{e-e^{-1}}\right], \left["\text{Continuous}", "\text{PDF}"\right]\right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\sinh(x+1)}$, "base", $2\,3^{x}\, e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}$, "GompertzRV(2,3)"

$$\text{"f(x)"},\ \frac{2\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\ |x|}$$

$$\text{"F(x)"},\ 2\left(\int_0^x \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ |t|}\,dt\right)$$

$$\text{"S(x)"},\ 1-2\left(\int_0^x \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ |t|}\,dt\right)$$

$$\text{"h(x)"},\ -\frac{2\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\ |x|\left(-1+2\left(\int_0^x \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)}\,e^{-\frac{2}{3}\,\frac{3^{\operatorname{arcsinh}\left(\frac{1}{t}\right)}-3}{\ln(3)}}}{\sqrt{t^2+1}\ |t|}\,dt\right)\right)}$$

$$\text{"mean and variance"},\ 2\left(\int_0^{\frac{2e}{e^2-1}} \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right),\ 2\left(\int_0^{\frac{2e}{e^2-1}} \frac{x\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right)-4\left(\int_0^{\frac{2e}{e^2-1}} \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2}{3}\,\frac{3^{\operatorname{arcsinh}\left(\frac{1}{x}\right)}-3}{\ln(3)}}}{\sqrt{x^2+1}}\,dx\right)^2$$

$$\text{"MF"}, \int_0^{\frac{2}{e-e^{-1}}} \frac{2\,x^{\sim}\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\;|x|}\,dx$$

$$\text{"MGF"}, 2\left(\int_0^{\frac{2e}{e^2-1}} \frac{3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}\,e^{-\frac{-t\,x\ln(3)+2\,3^{-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)}-2}{\ln(3)}}}{\sqrt{x^2+1}\;x}\,dx\right)$$

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

```
2\,{\frac {{3}^{-1+{\rm arcsinh} \left({x}^{-1}\right)}}{\sqrt {
{x}^{2
}+1} \left| x \right| }{{\rm e}^{-2\,{\frac {{3}^{-1+{\rm
arcsinh}
\left({x}^{-1}\right)}-1}{\ln  \left( 3 \right) }}}}}
```

"i is", 18,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[\left[y\sim \to \frac{2\,3^{-1+\sinh\left(\frac{1}{y\sim}\right)}\,e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{y\sim}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{y\sim}\right)}{y\sim^2}\right], \left[0, \frac{1}{\ln\left(1+\sqrt{2}\right)}\right], \text{["Continuous", "PDF"]}\right]$$

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

$$\text{"g(x)"}, \frac{1}{\operatorname{arcsinh}(x+1)}, \text{"base"}, 2\,3^{x}\,e^{-\frac{2\left(3^{x}-1\right)}{\ln(3)}}, \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"}, \frac{2\,3^{-1+\sinh\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{x}\right)}{x^{2}}$$

$$\text{"F(x)"}, e^{-\frac{2\left(3^{-1+\frac{1}{2}e^{\frac{1}{x}}-\frac{1}{2}e^{-\frac{1}{x}}}-1\right)}{\ln(3)}}$$

$$\text{"IDF(x)"}, \left[\left[s\to -1\Big/\left(\ln(\ln(3))-\ln\left(\ln(3)-\ln(2)+\ln(-\ln(s)\ln(3)+2)\right.\right.\right.$$
$$\left.+\left(-2\ln(3)\ln(2)+\ln(2)^{2}-2\ln(2)\ln(-\ln(s)\ln(3)+2)+2\ln(-\ln(s)\ln(3)\right.$$
$$\left.\left.\left.+2)\ln(3)+\ln(-\ln(s)\ln(3)+2)^{2}+2\ln(3)^{2}\right)^{1/2}\right)\right)\Big],[0,1],[\text{"Continuous"},\text{"IDF"}]\Big]$$

$$\text{"S(x)"}, 1-e^{-\frac{2\left(3^{-1+\frac{1}{2}e^{\frac{1}{x}}-\frac{1}{2}e^{-\frac{1}{x}}}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"}, -\frac{2\,3^{-1+\sinh\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{x}\right)}{x^{2}\left(-1+e^{-\frac{2\left(3^{-1+\frac{1}{2}e^{\frac{1}{x}}-\frac{1}{2}e^{-\frac{1}{x}}}-1\right)}{\ln(3)}}\right)}$$

$$\text{"mean and variance"}, 2\left(\int_{0}^{\frac{1}{\ln\left(1+\sqrt{2}\right)}}\frac{3^{-1+\sinh\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{x}\right)}{x}\,dx\right), 2\left(\right.$$
$$\left.\int_{0}^{\frac{1}{\ln\left(1+\sqrt{2}\right)}}3^{-1+\sinh\left(\frac{1}{x}\right)}\,e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{x}\right)dx\right)$$

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

$$\text{"MF"},\ \int_0^{\frac{1}{\ln\left(1+\sqrt{2}\right)}} \frac{2\,x^{r\sim}\,3^{-1+\sinh\left(\frac{1}{x}\right)}\, e^{-\frac{2\left(3^{-1+\sinh\left(\frac{1}{x}\right)}-1\right)}{\ln(3)}}\cosh\left(\frac{1}{x}\right)}{x^2}\,dx$$

$$\text{"MGF"},\ 2\left(\int_0^{\frac{1}{\ln\left(1+\sqrt{2}\right)}} \frac{3^{-1+\sinh\left(\frac{1}{x}\right)}\, e^{\frac{t\,x\ln(3)-2\,3^{-1+\sinh\left(\frac{1}{x}\right)}+2}{\ln(3)}}\cosh\left(\frac{1}{x}\right)}{x^2}\,dx\right)$$

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

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,* $\frac{1}{\ln\left(1+\sqrt{2}\right)}$

Resetting high to RV's maximum support value

```
2\,{\frac {{3}^{-1+\sinh \left( {x}^{-1} \right) }\cosh \left(
{x}^{-1
} \right) }{{x}^{2}}{{\rm e}^{-2\,{\frac {{3}^{-1+\sinh \left(
{x}^{-1
} \right) }-1}{\ln  \left( 3 \right) }}}}}
```

"i is", 19,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[\left[y\sim \to \frac{2\,3^{\operatorname{arccsch}\left(\frac{1}{y\sim-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{y\sim-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{y\sim^2-2\,y\sim+2}} \right], [1,\ \infty], ["Continuous", "PDF"] \right]\right.$$

$$\left.\text{"l and u"},\ 0,\ \infty\right]$$

$$\text{"g(x)"},\ \frac{1}{\operatorname{csch}(x)}+1,\ \text{"base"},\ 2\,3^x\, e^{-\frac{2\left(3^x-1\right)}{\ln(3)}},\ \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"},\ \frac{2\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}$$

$$\text{"F(x)"},\ 2\left(\int_1^x \frac{3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{t^2-2\,t+2}}\,dt\right)$$

$$\text{"S(x)"},\ 1-2\left(\int_1^x \frac{3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{t^2-2\,t+2}}\,dt\right)$$

$$\text{"h(x)"},\ -\frac{2\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}\left(-1+2\left(\int_1^x \frac{3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{t-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{t^2-2\,t+2}}\,dt\right)\right)}$$

$$\text{"mean and variance"},\ \int_1^\infty \frac{2\,x\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}\,dx,$$

$$\int_1^\infty \frac{2\,x^2\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\, e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}\,dx$$

$$-\left(\int_1^{\infty} \frac{2\,x\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}\,dx\right)^2$$

$$\text{"MF"},\ \int_1^{\infty} \frac{2\,x^{r\sim}\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,e^{-\frac{2\left(3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}-1\right)}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}\,dx$$

$$\text{"MGF"},\ \int_1^{\infty} \frac{2\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}\,e^{\frac{t\,x\ln(3)-2\,3^{\operatorname{arccsch}\left(\frac{1}{x-1}\right)}+2}{\ln(3)}}}{\sqrt{x^2-2\,x+2}}\,dx$$

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

```
2\,{\frac {{3}^{{\rm arccsch} \left( \left( x-1 \right) ^{-1}
\right)}
}{\sqrt {{x}^{2}-2\,x+2}}{{\rm e}^{-2\,{\frac {{3}^{{\rm
arccsch}
\left( \left( x-1 \right) ^{-1}\right)}-1}{\ln  \left( 3 \right)
}}}}}
```

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to -\frac{2\,3^{\frac{1}{\operatorname{arctanh}(y\sim)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(y\sim)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(y\sim)^2\left(y\sim^2-1\right)}\right], [0, 1], ["\text{Continuous}", "\text{PDF}"]\right]$$

"l and u", 0, ∞

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

$$\text{"f(x)"}, -\frac{2\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)}$$

$$\text{"F(x)"}, e^{-\frac{2\left(9^{\frac{1}{\ln(x+1)-\ln(1-x)}}-1\right)}{\ln(3)}}$$

$$\text{"IDF(x)"}, \left[\left[s\to -\frac{-1+9^{\frac{1}{\ln(2)-\ln(-\ln(s)\ln(3)+2)}}}{1+9^{\frac{1}{\ln(2)-\ln(-\ln(s)\ln(3)+2)}}}\right], [0,1], [\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"}, 1-e^{-\frac{2\left(9^{\frac{1}{\ln(x+1)-\ln(1-x)}}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"}, \frac{2\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)\left(-1+e^{-\frac{2\left(9^{\frac{1}{\ln(x+1)-\ln(1-x)}}-1\right)}{\ln(3)}}\right)}$$

$$\text{"mean and variance"}, -2\left(\int_{0}^{1}\frac{x\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)}\,dx\right), -2\left(\int_{0}^{1}\frac{x^{2}\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)}\,dx\right)-4\left(\int_{0}^{1}\frac{x\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)}\,dx\right)^{2}$$

$$\text{"MF"}, \int_{0}^{1}\left(-\frac{2\,x^{r\sim}\,3^{\frac{1}{\operatorname{arctanh}(x)}}\,e^{-\frac{2\left(3^{\frac{1}{\operatorname{arctanh}(x)}}-1\right)}{\ln(3)}}}{\operatorname{arctanh}(x)^{2}\,(x^{2}-1)}\right)dx$$

$$\text{"MGF"},\ -2\left(\int_0^1 \frac{3^{\frac{1}{\operatorname{arctanh}(x)}}\, e^{\frac{t x \ln(3) - 2\, 3^{\frac{1}{\operatorname{arctanh}(x)}} + 2}{\ln(3)}}}{\operatorname{arctanh}(x)^2 \left(x^2 - 1\right)}\, dx\right)$$

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

```
-2\,{\frac {{3}^{ \left( {\rm arctanh} \left(x\right) \right) ^
{-1}}}{
 \left( {\rm arctanh} \left(x\right) \right) ^{2} \left( {x}^{2}
-1
 \right) }{{\rm e}^{-2\,{\frac {{3}^{ \left( {\rm arctanh} \left
(x
\right) \right) ^{-1}}-1}{\ln  \left( 3 \right) }}}}}
```

"i is", 21,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[\left[y\sim \to \frac{2\, 3^{\frac{1}{\operatorname{arccsch}(y\sim)}}\, e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(y\sim)}} - 1\right)}{\ln(3)}}}{\sqrt{y\sim^2 + 1}\ \operatorname{arccsch}(y\sim)^2\, |y\sim|}\right], [0,\ \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

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

$$\text{"f(x)"}, \frac{2\, 3^{\frac{1}{\operatorname{arccsch}(x)}}\, e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(x)}} - 1\right)}{\ln(3)}}}{\sqrt{x^2 + 1}\ \operatorname{arccsch}(x)^2\, |x|}$$

$$\text{"F(x)"},\ 2\left(\int_0^x \frac{3^{\frac{1}{\operatorname{arccsch}(t)}}\ e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(t)}}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ \operatorname{arccsch}(t)^2\,|t|}\,dt\right)$$

$$\text{"S(x)"},\ 1-2\left(\int_0^x \frac{3^{\frac{1}{\operatorname{arccsch}(t)}}\ e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(t)}}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ \operatorname{arccsch}(t)^2\,|t|}\,dt\right)$$

$$\text{"h(x)"},\ -\frac{2\ 3^{\frac{1}{\operatorname{arccsch}(x)}}\ e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(x)}}-1\right)}{\ln(3)}}}{\sqrt{x^2+1}\ \operatorname{arccsch}(x)^2\,|x|\left(-1+2\left(\int_0^x \frac{3^{\frac{1}{\operatorname{arccsch}(t)}}\ e^{-\frac{2\left(3^{\frac{1}{\operatorname{arccsch}(t)}}-1\right)}{\ln(3)}}}{\sqrt{t^2+1}\ \operatorname{arccsch}(t)^2\,|t|}\,dt\right)\right)}$$

"i is", 22,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 2\ 3^{\sinh(y\sim)}\ e^{-\frac{2\left(3^{\sinh(y\sim)}-1\right)}{\ln(3)}}\cosh(y\sim)\right], [0,\ \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

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

$$\text{"g(x)"}, \operatorname{arccsch}\left(\frac{1}{x}\right), \text{"base"}, 2\ 3^x\ e^{-\frac{2\left(3^x-1\right)}{\ln(3)}}, \text{"GompertzRV(2,3)"}$$

$$\text{"f(x)"},\ 2\ 3^{\sinh(x)}\ e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)$$

$$\text{"F(x)"},\ -e^{-\frac{2\left(3\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}-1\right)}{\ln(3)}}+1$$

$$\text{"IDF(x)"}, \left[\left[s \to -\ln(\ln(3)) + \ln\left(-\ln(2) + \ln(-\ln(1-s)\ln(3)+2) + \sqrt{\ln(3)^2+\ln(2)^2-2\ln(2)\ln(-\ln(1-s)\ln(3)+2)+\ln(-\ln(1-s)\ln(3)+2)^2}\right)\right], [0,1], [\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"}, e^{-\frac{2\left(3^{\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}}-1\right)}{\ln(3)}}$$

$$\text{"h(x)"}, 2\,3^{\sinh(x)}\,e^{\frac{2\left(-3^{\sinh(x)}+3^{\frac{1}{2}e^{x}-\frac{1}{2}e^{-x}}\right)}{\ln(3)}}\cosh(x)$$

$$\text{"mean and variance"}, \int_0^{\infty} 2\,x\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx,$$

$$\int_0^{\infty} 2\,x^2\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx-\left(\int_0^{\infty} 2\,x\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx\right)^2$$

$$\text{"MF"}, \int_0^{\infty} 2\,x^{r\sim}\,3^{\sinh(x)}\,e^{-\frac{2\left(3^{\sinh(x)}-1\right)}{\ln(3)}}\cosh(x)\,dx$$

$$\text{"MGF"}, \int_0^{\infty} 2\,e^{\frac{t\,x\ln(3)-2\,3^{\sinh(x)}+2}{\ln(3)}}\,3^{\sinh(x)}\cosh(x)\,dx$$

```
2\,{3}^{\sinh \left( x \right) }{{\rm e}^{-2\,{\frac {{3}^{\sinh
 \left( x \right) }-1}{\ln  \left( 3 \right) }}}}\cosh \left( x
 \right)
```