

"GompertzRV(2,3)"

$$[x \mapsto 2 \, 3^x e^{-2 \frac{3^x - 1}{\ln(3)}}]$$

$$t \mapsto t^2$$

Probability Distribution Function

$$f(x) = \frac{3^{\sqrt{x}}}{\sqrt{x}} e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}}$$

Cumulative Distribution Function

$$F(x) = 1 - e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \frac{(\ln(2) - \ln(-\ln(1-s)\ln(3) + 2))^2}{(\ln(3))^2}]$$

Survivor Function

$$S(x) = e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}}$$

Hazard Function

$$h(x) = \frac{3^{\sqrt{x}}}{\sqrt{x}}$$

Mean

$$mu = \int_0^\infty \sqrt{x} 3^{\sqrt{x}} e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}} dx$$

Variance

$$sigma^2 = \int_0^\infty x^{3/2} 3^{\sqrt{x}} e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}} dx - \left(\int_0^\infty \sqrt{x} 3^{\sqrt{x}} e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^\infty \frac{x^r 3^{\sqrt{x}}}{\sqrt{x}} e^{-2 \frac{3^{\sqrt{x}} - 1}{\ln(3)}} dx$$

Moment Generating Function

$$\int_0^\infty \frac{3^{\sqrt{x}}}{\sqrt{x}} e^{-\frac{-tx \ln(3) + 2 \, 3^{\sqrt{x}} - 2}{\ln(3)}} dx_1$$

$$t \mapsto \sqrt{t}$$

Probability Distribution Function

$$f(x) = 4 \, 3^{x^2} \, \mathrm{e}^{-2 \frac{3^{x^2}-1}{\ln(3)}} \, x$$

Cumulative Distribution Function

$$F(x) = 1 - \mathrm{e}^{-2 \frac{3^{x^2}-1}{\ln(3)}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \mathit{RootOf} \left(\ln(1-s) \ln(3) + 2 \, 3^{-Z^2} - 2 \right)]$$

Survivor Function

$$S(x) = \mathrm{e}^{-2 \frac{3^{x^2}-1}{\ln(3)}}$$

Hazard Function

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

Mean

$$mu = \int_0^\infty 4 \, x^2 \, 3^{x^2} \, \mathrm{e}^{-2 \frac{3^{x^2}-1}{\ln(3)}} \, \mathrm{d}x$$

Variance

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

Moment Function

$$m(x) = \int_0^\infty 4 \, x^r \, 3^{x^2} \, x \, \mathrm{e}^{-2 \frac{3^{x^2}-1}{\ln(3)}} \, \mathrm{d}x$$

Moment Generating Function

$$\int_0^\infty 4 \, 3^{x^2} \, x \, \mathrm{e}^{-\frac{-tx \ln(3) + 2 \, 3^{x^2} - 2}{\ln(3)}} \, \mathrm{d}x_1$$

$$t \mapsto t^{-1}$$

Probability Distribution Function

$$f(x) = 2 \frac{\sqrt[3]{3}}{x^2} e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}}$$

Cumulative Distribution Function

$$F(x) = e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \frac{\ln(3)}{-\ln(2) + \ln(-\ln(s) \ln(3) + 2)}]$$

Survivor Function

$$S(x) = 1 - e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}}$$

Hazard Function

$$h(x) = -2 \frac{\sqrt[3]{3}}{x^2} e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}} \left(-1 + e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}} \right)^{-1}$$

Mean

$$\mu = \infty$$

Variance

$$\sigma^2 = \text{undefined}$$

Moment Function

$$m(x) = \int_0^\infty 2 \frac{x^r \sqrt[3]{3}}{x^2} e^{-2 \frac{\sqrt[3]{3}-1}{\ln(3)}} dx$$

Moment Generating Function

$$\int_0^\infty 2 \frac{\sqrt[3]{3}}{x^2} e^{\frac{tx \ln(3) - 2 \sqrt[3]{3} + 2}{\ln(3)}} dx_1$$

$$t \mapsto \arctan(t)$$

Probability Distribution Function

$$f(x) = 2 3^{\tan(x)} e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} (1 + (\tan(x))^2)$$

Cumulative Distribution Function

$$F(x) = \begin{cases} 1 - e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} & x \leq \pi/2 \\ e^{2(\ln(3))^{-1} \left\lfloor -1/2 \frac{-2x+\pi}{\pi} \right\rfloor} - e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} + e^{2(\ln(3))^{-1}} + 1 & \pi/2 < x \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \text{RootOf} \left(-e^{2(\ln(3))^{-1} \left\lfloor -1/2 \frac{-2-Z+\pi}{\pi} \right\rfloor} + e^{-2 \frac{3^{\tan(-Z)} - 1}{\ln(3)}} - e^{2(\ln(3))^{-1}} - 1 + s \right)]$$

Survivor Function

$$S(x) = \begin{cases} e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} & x \leq \pi/2 \\ -e^{2(\ln(3))^{-1} \left\lfloor -1/2 \frac{-2x+\pi}{\pi} \right\rfloor} + e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} - e^{2(\ln(3))^{-1}} & \pi/2 < x \end{cases}$$

Hazard Function

$$h(x) = \begin{cases} 2 \cdot 3^{\tan(x)} (1 + (\tan(x))^2) & \\ -2 \cdot 3^{\tan(x)} (1 + (\tan(x))^2) e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} \left(e^{2(\ln(3))^{-1} \left\lfloor -1/2 \frac{-2x+\pi}{\pi} \right\rfloor} + e^{2(\ln(3))^{-1}} - e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} \right) & \end{cases}$$

Mean

$$mu = 2 \int_0^{\pi/2} \frac{x}{(\cos(x))^2} e^{-2 \frac{1}{\ln(3)} \left(3^{\frac{\sin(x)}{\cos(x)}} - 1 \right)} 3^{\frac{\sin(x)}{\cos(x)}} dx$$

Variance

$$sigma^2 = 2 \int_0^{\pi/2} \frac{x^2}{(\cos(x))^2} e^{-2 \frac{1}{\ln(3)} \left(3^{\frac{\sin(x)}{\cos(x)}} - 1 \right)} 3^{\frac{\sin(x)}{\cos(x)}} dx - 4 \left(\int_0^{\pi/2} \frac{x}{(\cos(x))^2} e^{-2 \frac{1}{\ln(3)} \left(3^{\frac{\sin(x)}{\cos(x)}} - 1 \right)} 3^{\frac{\sin(x)}{\cos(x)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{\pi/2} 2 x^r 3^{\tan(x)} e^{-2 \frac{3^{\tan(x)} - 1}{\ln(3)}} (1 + (\tan(x))^2) dx$$

Moment Generating Function

$$2 \int_0^{\pi/2} \frac{1}{(\cos(x))^2} e^{\frac{1}{\ln(3)} \left(t x \ln(3) - 2 \cdot 3^{\frac{\sin(x)}{\cos(x)}} + 2 \right)} 3^{\frac{\sin(x)}{\cos(x)}} dx_1$$

$$t \mapsto e^t$$

Probability Distribution Function

$$f(x) = 2 x^{\ln(3)-1} e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{\frac{-\ln(2)+\ln(-\ln(1-s)\ln(3)+2)}{\ln(3)}}]$$

Survivor Function

$$S(x) = e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}}$$

Hazard Function

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

Mean

$$mu = \int_1^\infty 2 x^{\ln(3)} e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}} dx$$

Variance

$$sigma^2 = \int_1^\infty 2 x^{1+\ln(3)} e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}} dx - \left(\int_1^\infty 2 x^{\ln(3)} e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_1^\infty 2 x^r x^{\ln(3)-1} e^{-2 \frac{x^{\ln(3)}-1}{\ln(3)}} dx$$

Moment Generating Function

$$\int_1^\infty 2 x^{\ln(3)-1} e^{\frac{tx \ln(3)-2 x^{\ln(3)}+2}{\ln(3)}} dx_1$$

$$t \mapsto \ln(t)$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(\ln(3)) + \ln(-\ln(2) + \ln(-\ln(1-s) \ln(3) + 2))]$$

Survivor Function

$$S(x) = e^{-2 \frac{3^{e^x} - 1}{\ln(3)}}$$

Hazard Function

$$h(x) = 2 \cdot 3^{e^x} \cdot e^x$$

$$t \mapsto e^{-t}$$

Probability Distribution Function

$$f(x) = 2 x^{-1-\ln(3)} e^{-2 \frac{x^{-\ln(3)} - 1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{\frac{\ln(2) - \ln(-\ln(s) \ln(3) + 2)}{\ln(3)}}]$$

Survivor Function

$$S(x) = 1 - e^{-2 \frac{x^{-\ln(3)} - 1}{\ln(3)}}$$

Hazard Function

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

Mean

$$\mu = 2 \int_0^1 x^{-\ln(3)} e^{-2 \frac{x^{-\ln(3)} - 1}{\ln(3)}} dx$$

Variance

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

Moment Function

$$m(x) = \int_0^1 2 x^r x^{-1-\ln(3)} e^{-2 \frac{x^{-\ln(3)} - 1}{\ln(3)}} dx$$

Moment Generating Function

$$2 \int_0^1 x^{-1-\ln(3)} e^{\frac{tx \ln(3) - 2 x^{-\ln(3)} + 2}{\ln(3)}} dx_1$$

$$t \mapsto -\ln(t)$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \ln(\ln(3)) - \ln(-\ln(2) + \ln(-\ln(s) \ln(3) + 2))]$$

Survivor Function

$$S(x) = 1 - e^{-2 \frac{3^{e^{-x}} - 1}{\ln(3)}}$$

Hazard Function

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

$$t \mapsto \ln(t+1)$$

Probability Distribution Function

$$f(x) = 2 \cdot 3^{e^x-1} e^{\frac{x \ln(3) - 2 \cdot 3^{e^x-1} + 2}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(\ln(3)) + \ln(\ln(3) - \ln(2) + \ln(-\ln(1-s)\ln(3) + 2))]$$

Survivor Function

$$S(x) = e^{-2 \frac{3^{e^x-1}-1}{\ln(3)}}$$

Hazard Function

$$h(x) = 2 \cdot 3^{e^x-1} e^x$$

$$t \mapsto (\ln(t+2))^{-1}$$

Probability Distribution Function

$$f(x) = 2/9 \frac{3^{e^x-1}}{x^2} e^{1/9 \frac{-2 \cdot x \cdot 3^{e^x-1} + 9 \ln(3) + 18 \cdot x}{x \ln(3)}}$$

Cumulative Distribution Function

$$F(x) = e^{-2/9 \frac{3^{e^x-1}-9}{\ln(3)}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto (-\ln(\ln(3)) + \ln(2 \ln(3) - \ln(2) + \ln(-\ln(s)\ln(3) + 2)))]^{-1}]$$

Survivor Function

$$S(x) = 1 - e^{-2/9 \frac{3^{e^x-1}-9}{\ln(3)}}$$

Hazard Function

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

Mean

$$mu = 2/9 \int_0^{(\ln(2))^{-1}} \frac{3^{e^{x-1}}}{x} e^{1/9 \frac{-2 x 3^{e^{x-1}} + 9 \ln(3) + 18 x}{x \ln(3)}} dx$$

Variance

$$sigma^2 = 2/9 \int_0^{(\ln(2))^{-1}} 3^{e^{x-1}} e^{1/9 \frac{-2 x 3^{e^{x-1}} + 9 \ln(3) + 18 x}{x \ln(3)}} dx - \frac{4}{81} \left(\int_0^{(\ln(2))^{-1}} \frac{3^{e^{x-1}}}{x} e^{1/9 \frac{-2 x 3^{e^{x-1}} + 9 \ln(3) + 18 x}{x \ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{(\ln(2))^{-1}} 2/9 \frac{x^r 3^{e^{x-1}}}{x^2} e^{1/9 \frac{-2 x 3^{e^{x-1}} + 9 \ln(3) + 18 x}{x \ln(3)}} dx$$

Moment Generating Function

$$2/9 \int_0^{(\ln(2))^{-1}} \frac{3^{e^{x-1}}}{x^2} e^{1/9 \frac{9 t x^2 \ln(3) - 2 x 3^{e^{x-1}} + 9 \ln(3) + 18 x}{x \ln(3)}} dx_1$$

$$t \mapsto \tanh(t)$$

Probability Distribution Function

$$f(x) = -2 \frac{3^{\arctanh(x)}}{x^2 - 1} e^{-2 \frac{3^{\arctanh(x)} - 1}{\ln(3)}}$$

Cumulative Distribution Function

$$F(x) = -e^{-2 \frac{(x+1)^{1/2} \ln(3) - \sqrt{(1-x) \ln(3)}}{\sqrt{(1-x) \ln(3)} \ln(3)}} + 1$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -1 + 4^{-(\ln(3))^{-1}} \left(-3^{1/2 \operatorname{RootOf} \left(e^{-Z} - 2 + e^{2 \frac{-\ln(2) + \ln(-3^{-Z/2} (\ln(1-s) \ln(3) - 2))}{\ln(3)}} \right)} \right) (\ln(1-s) \ln(3) -$$

Survivor Function

$$S(x) = e^{-2 \frac{(x+1)^{1/2} \ln(3) - \sqrt{(1-x)\ln(3)}}{\sqrt{(1-x)\ln(3)} \ln(3)}}$$

Hazard Function

$$h(x) = -2 \frac{3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{-2 \frac{\sqrt{(1-x)\ln(3)} 3^{\operatorname{arctanh}(x)} - (x+1)^{1/2} \ln(3)}{\sqrt{(1-x)\ln(3)} \ln(3)}}$$

Mean

$$\mu = -2 \int_0^1 \frac{x 3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{-2 \frac{3^{\operatorname{arctanh}(x)} - 1}{\ln(3)}} dx$$

Variance

$$\sigma^2 = -2 \int_0^1 \frac{x^2 3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{-2 \frac{3^{\operatorname{arctanh}(x)} - 1}{\ln(3)}} dx - 4 \left(\int_0^1 \frac{x 3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{-2 \frac{3^{\operatorname{arctanh}(x)} - 1}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^1 -2 \frac{x^r 3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{-2 \frac{3^{\operatorname{arctanh}(x)} - 1}{\ln(3)}} dx$$

Moment Generating Function

$$-2 \int_0^1 \frac{3^{\operatorname{arctanh}(x)}}{x^2 - 1} e^{\frac{tx \ln(3) - 2 3^{\operatorname{arctanh}(x)} + 2}{\ln(3)}} dx_1$$

$$t \mapsto \sinh(t)$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto 1/2 \left(e^{2 \frac{-\ln(2) + \ln(-\ln(1-s) \ln(3) + 2)}{\ln(3)}} - 1 \right) e^{-\frac{-\ln(2) + \ln(-\ln(1-s) \ln(3) + 2)}{\ln(3)}}]$$

Survivor Function

$$S(x) = e^{-2 \frac{(-x + \sqrt{x^2 + 1})^{-\ln(3)} - 1}{\ln(3)}}$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

$$m(x) = \int_0^\infty 2 \frac{x^r 3^{\operatorname{arcsinh}(x)}}{\sqrt{x^2 + 1}} e^{-2 \frac{3^{\operatorname{arcsinh}(x)} - 1}{\ln(3)}} dx$$

Moment Generating Function

$$\int_0^\infty 2 \frac{3^{\operatorname{arcsinh}(x)}}{\sqrt{x^2 + 1}} e^{\frac{tx \ln(3) - 2 \cdot 3^{\operatorname{arcsinh}(x)} + 2}{\ln(3)}} dx_1$$

$$t \mapsto \operatorname{arcsinh}(t)$$

Probability Distribution Function

$$f(x) = 2 \cdot 3^{\sinh(x)} e^{-2 \frac{3^{\sinh(x)} - 1}{\ln(3)}} \cosh(x)$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(\ln(3)) + \ln\left(-\ln(2) + \ln(-\ln(1-s)\ln(3) + 2) + \sqrt{(\ln(2))^2 - 2\ln(2)\ln(-1)}$$

Survivor Function

$$S(x) = e^{-2 \frac{3^{1/2} e^x - 1/2 e^{-x} - 1}{\ln(3)}}$$

Hazard Function

$$h(x) = 2 \cdot 3^{\sinh(x)} e^{2 \frac{-3^{\sinh(x)} + 3^{1/2} e^x - 1/2 e^{-x} - 1}{\ln(3)}} \cosh(x)$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$\int_0^\infty 2 e^{\frac{t x \ln(3) - 2 \cdot 3^{\sinh(x)} + 2}{\ln(3)}} 3^{\sinh(x)} \cosh(x) \, dx_1$$

$$t \mapsto \operatorname{csch}(t+1)$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1} |x|} e^{-2 \frac{3^{-1+\operatorname{arccsch}(x)} - 1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = 2 \int_0^{2^{\frac{e}{e^2-1}}} \frac{3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1}} e^{-2 \frac{3^{-1+\operatorname{arccsch}(x)}-1}{\ln(3)}} dx$$

Variance

$$sigma^2 = 2 \int_0^{2^{\frac{e}{e^2-1}}} \frac{x 3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1}} e^{-2 \frac{3^{-1+\operatorname{arccsch}(x)}-1}{\ln(3)}} dx - 4 \left(\int_0^{2^{\frac{e}{e^2-1}}} \frac{3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1}} e^{-2/3 \frac{3^{\operatorname{arccsch}(x)}-3}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{2^{(e-e^{-1})^{-1}}} 2 \frac{x^r 3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1} |x|} e^{-2 \frac{3^{-1+\operatorname{arccsch}(x)}-1}{\ln(3)}} dx$$

Moment Generating Function

$$2 \int_0^{2^{\frac{e}{e^2-1}}} \frac{3^{-1+\operatorname{arccsch}(x)}}{\sqrt{x^2+1} x} e^{\frac{tx \ln(3) - 2 \frac{3^{-1+\operatorname{arccsch}(x)}-1}{\ln(3)}}{}} dx_1$$

$$t \mapsto \operatorname{arccsch}(t+1)$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \ln \left(\frac{\ln(3) + \sqrt{2 (\ln(3))^2 - 2 \ln(3) \ln(2) + (\ln(2))^2 + 2 \ln(-\ln(s) \ln(3) + 2) \ln(3)}}{\ln(3) - \ln(2) + \ln(-\ln(s) \ln(3) + 2)} \right)]$$

Survivor Function

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

Hazard Function

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

Mean

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

Variance

$$\sigma^2 = 4 \int_0^{\ln(1+\sqrt{2})} \frac{\cosh(x) x^2}{-1 + \cosh(2x)} 3^{-\frac{\sinh(x)-1}{\sinh(x)}} e^{-2 \frac{1}{\ln(3)} \left(3^{-\frac{\sinh(x)-1}{\sinh(x)}} - 1 \right)} dx - 16 \left(\int_0^{\ln(1+\sqrt{2})} \frac{\cosh(x) x}{-1 + \cosh(2x)} 3^{-\frac{\sinh(x)-1}{\sinh(x)}} e^{-2 \frac{1}{\ln(3)} \left(3^{-\frac{\sinh(x)-1}{\sinh(x)}} - 1 \right)} dx \right)^2$$

Moment Function

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

Moment Generating Function

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

$$t \mapsto (\tanh(t+1))^{-1}$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{-2 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}-1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{\frac{1}{\ln(3)} \left(\ln(3) \ln \left(- \left(-1 + e^{-2 \frac{\ln(3) - \ln(2) + \ln(-\ln(s) \ln(3) + 2)}{\ln(3)}} \right)^{-1} \right) + \ln(3) \ln(2) - 2 \ln(3) + 2 \ln(2) - 2 \ln(-\ln(s) \ln(3) + 2)} \right]}$$

Survivor Function

$$S(x) = 1 - e^{-2/3 \frac{(x+1)^{1/2} \ln(3) (x-1)^{-1/2} \ln(3) - 3}{\ln(3)}}$$

Hazard Function

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

Mean

$$\mu = 2 \int_1^{\frac{e^2+1}{e^2-1}} \frac{x 3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{-2 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}-1}{\ln(3)}} dx$$

Variance

$$\sigma^2 = 2 \int_1^{\frac{e^2+1}{e^2-1}} \frac{x^2 3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{-2 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}-1}{\ln(3)}} dx - 4 \left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x 3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{-2/3 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}-1}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_1^{\frac{e^x+e^{-1}}{e^x-e^{-1}}} 2 \frac{x^r 3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{-2 \frac{3^{-1+\operatorname{arctanh}(x^{-1})}-1}{\ln(3)}} dx$$

Moment Generating Function

$$2 \int_1^{\frac{e^2+1}{e^2-1}} \frac{3^{-1+\operatorname{arctanh}(x^{-1})}}{x^2-1} e^{\frac{tx \ln(3)-2}{\ln(3)} 3^{-1+\operatorname{arctanh}(x^{-1})+2}} dx_1$$

$$t \mapsto (\sinh(t+1))^{-1}$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1} |x|} e^{-2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})-1}}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = 2 \int_0^{\frac{e}{e^2-1}} \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1}} e^{-2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})-1}}{\ln(3)}} dx$$

Variance

$$sigma^2 = 2 \int_0^{\frac{e}{e^2-1}} x \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1}} e^{-2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})-1}}{\ln(3)}} dx - 4 \left(\int_0^{\frac{e}{e^2-1}} \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1}} e^{-2/3 \frac{\operatorname{arcsinh}(x^{-1})-3}{\ln(3)}} dx \right)^{-1}$$

Moment Function

$$m(x) = \int_0^{2^{(e-e^{-1})^{-1}}} 2 \frac{x^r 3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1} |x|} e^{-2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}-1}{\ln(3)}} dx$$

Moment Generating Function

$$2 \int_0^{2^{\frac{e}{e^2-1}}} \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}}{\sqrt{x^2+1} x} e^{-\frac{-tx \ln(3)+2 \frac{3^{-1+\operatorname{arcsinh}(x^{-1})}-1}{\ln(3)}}{2}} dx_1$$

$$t \mapsto (\operatorname{arcsinh}(t+1))^{-1}$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{-1+\sinh(x^{-1})} \cosh(x^{-1})}{x^2} e^{-2 \frac{3^{-1+\sinh(x^{-1})}-1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto - \left(\ln(\ln(3)) - \ln \left(\ln(3) - \ln(2) + \ln(-\ln(s) \ln(3) + 2) + \sqrt{-2 \ln(3) \ln(2) + (\ln(3) - \ln(2))^2} \right) \right)]$$

Survivor Function

$$S(x) = 1 - e^{-2 \frac{1}{\ln(3)} \left(3^{-1+1/2 e^{x^{-1}}-1/2 e^{-x^{-1}}}-1 \right)}$$

Hazard Function

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

Mean

$$mu = 2 \int_0^{(\ln(1+\sqrt{2}))^{-1}} \frac{3^{-1+\sinh(x^{-1})} \cosh(x^{-1})}{x} e^{-2 \frac{3^{-1+\sinh(x^{-1})}-1}{\ln(3)}} dx$$

Variance

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

Moment Function

$$m(x) = \int_0^{(\ln(1+\sqrt{2}))^{-1}} 2 \frac{x^r 3^{-1+\sinh(x^{-1})} \cosh(x^{-1})}{x^2} e^{-2 \frac{3^{-1+\sinh(x^{-1})}-1}{\ln(3)}} dx$$

Moment Generating Function

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

$$t \mapsto (\operatorname{csch}(t))^{-1} + 1$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{\operatorname{arccsch}((x-1)^{-1})}}{\sqrt{x^2 - 2x + 2}} e^{-2 \frac{3^{\operatorname{arccsch}((x-1)^{-1})}-1}{\ln(3)}}$$

Cumulative Distribution Function

$$F(x) = 2 \int_1^x \frac{3^{\operatorname{arccsch}((t-1)^{-1})}}{\sqrt{t^2 - 2t + 2}} e^{-2 \frac{3^{\operatorname{arccsch}((t-1)^{-1})}-1}{\ln(3)}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 2 \int_1^x \frac{3^{\operatorname{arccsch}((t-1)^{-1})}}{\sqrt{t^2 - 2t + 2}} e^{-2 \frac{3^{\operatorname{arccsch}((t-1)^{-1})}-1}{\ln(3)}} dt$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$\int_1^\infty 2 \frac{3^{\operatorname{arccsch}((x-1)^{-1})}}{\sqrt{x^2 - 2x + 2}} e^{\frac{tx \ln(3) - 2 \frac{3^{\operatorname{arccsch}((x-1)^{-1})} - 1}{\ln(3)}}}{dx_1}$$

$$t \mapsto \tanh(t^{-1})$$

Probability Distribution Function

$$f(x) = -2 \frac{3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{-2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\frac{-1 + 9^{(\ln(2) - \ln(-\ln(s) \ln(3) + 2))^{-1}}}{1 + 9^{(\ln(2) - \ln(-\ln(s) \ln(3) + 2))^{-1}}}]$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = -2 \int_0^1 \frac{x 3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{-2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)}} dx$$

Variance

$$sigma^2 = -2 \int_0^1 \frac{x^2 3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{-2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)}} dx - 4 \left(\int_0^1 \frac{x 3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{-2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^1 -2 \frac{x^r 3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{-2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)}} dx$$

Moment Generating Function

$$-2 \int_0^1 \frac{3^{(\operatorname{arctanh}(x))^{-1}}}{(\operatorname{arctanh}(x))^2 (x^2 - 1)} e^{\frac{tx \ln(3) - 2 \frac{3^{(\operatorname{arctanh}(x))^{-1}} - 1}{\ln(3)} + 2}{\ln(3)}} dx_1$$

$$t \mapsto \operatorname{csch}(t^{-1})$$

Probability Distribution Function

$$f(x) = 2 \frac{3^{(\operatorname{arccsch}(x))^{-1}}}{\sqrt{x^2 + 1} (\operatorname{arccsch}(x))^2 |x|} e^{-2 \frac{3^{(\operatorname{arccsch}(x))^{-1}} - 1}{\ln(3)}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

$$t \mapsto \text{arccsch}(t^{-1})$$

Probability Distribution Function

$$f(x) = 2 3^{\sinh(x)} e^{-2 \frac{3^{\sinh(x)} - 1}{\ln(3)}} \cosh(x)$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(\ln(3)) + \ln \left(-\ln(2) + \ln(-\ln(1-s)\ln(3) + 2) + \sqrt{(\ln(3))^2 + (\ln(2))^2 - 2\ln(2)} \right)]$$

Survivor Function

$$S(x) = e^{-2 \frac{3^{1/2} e^x - 1/2 e^{-x} - 1}{\ln(3)}}$$

Hazard Function

$$h(x) = 2 3^{\sinh(x)} e^{2 \frac{-3^{\sinh(x)} + 3^{1/2} e^x - 1/2 e^{-x}}{\ln(3)}} \cosh(x)$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$\int_0^\infty 2 e^{\frac{tx \ln(3) - 2 \cdot 3^{\sinh(x)} + 2}{\ln(3)}} 3^{\sinh(x)} \cosh(x) \, dx_1$$