

"InvertedGammaRV(2,3)"

$$[x \mapsto 1/9 \frac{1}{x^3} e^{-1/3 x^{-1}}]$$

$$t \mapsto t^2$$

Probability Distribution Function

$$f(x) = 1/18 \frac{1}{x^2} e^{-1/3 \frac{1}{\sqrt{x}}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto 1/9 \left(W(-se^{-1}) + 1 \right)^{-2}]$$

Survivor Function

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

Hazard Function

$$h(x) = -1/6 \frac{1}{x^{3/2}} e^{-1/3 \frac{1}{\sqrt{x}}} \left(3 e^{-1/3 \frac{1}{\sqrt{x}}} \sqrt{x} + e^{-1/3 \frac{1}{\sqrt{x}}} - 3 \sqrt{x} \right)^{-1}$$

Mean

$$mu = \infty$$

Variance

$$sigma^2 = undefined$$

Moment Function

$$m(x) = 3^{-2r} \Gamma(2 - 2r)$$

Moment Generating Function

$$-1/18 \frac{{}_tG_{0,3}^{3,0} \left(-t/36 \middle|_{1/2,0,-1} \right)}{\sqrt{\pi}}_1$$

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

Probability Distribution Function

$$f(x) = 2/9 \frac{1}{x^5} e^{-1/3 x^{-2}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$\mu = 1/6 \sqrt{3} \sqrt{\pi}$$

Variance

$$\sigma^2 = 1/3 - \pi/12$$

Moment Function

$$m(x) = 3^{-r/2} \Gamma(-r/2 + 2)$$

Moment Generating Function

$$\frac{G_{0,3}^{3,0} \left(1/12 t^2 \middle|_{2,1/2,0} \right)}{\sqrt{\pi}} \quad 1$$

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

Probability Distribution Function

$$f(x) = 1/9 x e^{-x/3}$$

Cumulative Distribution Function

$$F(x) = 1 - 1/3 x e^{-x/3} - e^{-x/3}$$

Inverse Cumulative Distribution Function

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

Survivor Function

$$S(x) = 1/3 e^{-x/3} (x + 3)$$

Hazard Function

$$h(x) = 1/3 \frac{x}{x + 3}$$

Mean

$$\mu = 6$$

Variance

$$\sigma^2 = 18$$

Moment Function

$$m(x) = 1/9 (1/3)^{-2-r} \Gamma(r) (r^2 + r)$$

Moment Generating Function

$$\lim_{x \rightarrow \infty} 1/3 \frac{3 e^{1/3 x(3t-1)} t x - x e^{1/3 x(3t-1)} - 3 e^{1/3 x(3t-1)} + 3}{9 t^2 - 6 t + 1} \quad 1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{\cos(x)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}}$$

Cumulative Distribution Function

$$F(x) = \begin{cases} 1/6 \frac{2(\cos(x/2))^2 + 6 \cos(x/2) \sin(x/2) - 1}{\cos(x/2) \sin(x/2)} e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \\ 1/6 \frac{1}{\cos(x/2) \sin(x/2)} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 + 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right. \\ \left. - 1/6 \frac{1}{\cos(x/2) \sin(x/2)} \left(\cos(x/2) \sin(x/2) \infty - 2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 - 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right) \right) \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} = []$$

Survivor Function

$$S(x) = \begin{cases} -1/6 \frac{1}{\cos(x/2) \sin(x/2)} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 + 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right. \\ -1/6 \frac{1}{\cos(x/2) \sin(x/2)} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 + 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right. \\ \left. 1/6 \frac{1}{\cos(x/2) \sin(x/2)} \left(\cos(x/2) \sin(x/2) \infty - 2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 - 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right) \right) \end{cases}$$

Hazard Function

$$h(x) = \begin{cases} -2/3 \frac{\cos(x) \cos(x/2) \sin(x/2)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 + 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right. \\ -2/3 \frac{\cos(x) \cos(x/2) \sin(x/2)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 + 6 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} \cos(x/2) \sin(x/2) \right. \\ \left. -2/3 \frac{\cos(x) \cos(x/2) \sin(x/2)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} \left(2 e^{-1/6 \frac{2(\cos(x/2))^2 - 1}{\cos(x/2) \sin(x/2)}} (\cos(x/2))^2 - \cos(x/2) \sin(x/2) \right) \right) \end{cases}$$

Mean

$$mu = 1/9 \int_0^{\pi/2} \frac{x \cos(x)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} dx$$

Variance

$$sigma^2 = 1/9 \int_0^{\pi/2} \frac{x^2 \cos(x)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} dx - \frac{1}{81} \left(\int_0^{\pi/2} \frac{x \cos(x)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{\pi/2} 1/9 \frac{x^r \cos(x)}{(\sin(x))^3} e^{-1/3 \frac{\cos(x)}{\sin(x)}} dx$$

Moment Generating Function

$$1/9 \int_0^{\pi/2} \frac{\cos(x)}{(\sin(x))^3} e^{1/3 \frac{3tx \sin(x) - \cos(x)}{\sin(x)}} dx_1$$

$$t \mapsto e^t$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{-1/3 (W(-se^{-1})+1)^{-1}}]$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = \infty$$

Variance

$$sigma^2 = undefined$$

Moment Function

$$m(x) = \infty$$

Moment Generating Function

$$\int_1^\infty 1/9 \frac{1}{(\ln(x))^3 x} e^{1/3 \frac{3tx \ln(x) - 1}{\ln(x)}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 e^{-1/3 e^{-x} - 2x}$$

Cumulative Distribution Function

$$F(x) = 1/3 (3 e^x + 1) e^{-1/3 (3 x e^x + 1) e^{-x}}$$

Inverse Cumulative Distribution Function

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

Survivor Function

$$S(x) = 1 - e^{-1/3 e^{-x}} - 1/3 e^{-1/3 e^{-x} - x}$$

Hazard Function

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

Mean

$$\mu = \int_{-\infty}^{\infty} 1/9 x e^{-1/3 e^{-x} - 2x} dx$$

Variance

$$\sigma^2 = \int_{-\infty}^{\infty} 1/9 x^2 e^{-1/3 e^{-x} - 2x} dx - \left(\int_{-\infty}^{\infty} 1/9 x e^{-1/3 e^{-x} - 2x} dx \right)^2$$

Moment Function

$$m(x) = \int_{-\infty}^{\infty} 1/9 x^r e^{-1/3 e^{-x} - 2x} dx$$

Moment Generating Function

$$\int_{-\infty}^{\infty} 1/9 e^{tx - 1/3 e^{-x} - 2x} dx$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \begin{cases} -1/3 \frac{1}{\ln(x)} \left(3 e^{1/3 (\ln(x))^{-1}} \ln(x) - 3 \ln(x) - e^{1/3 (\ln(x))^{-1}} \right) & x \leq 1 \\ -\infty & 1 < x \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{1/3 (W((s-1)e^{-1})+1)^{-1}}]$$

Survivor Function

$$S(x) = \begin{cases} 1/3 \frac{3 \ln(x)-1}{\ln(x)} e^{1/3 (\ln(x))^{-1}} & x \leq 1 \\ \infty & 1 < x \end{cases}$$

Hazard Function

$$h(x) = \begin{cases} -1/3 \frac{1}{(\ln(x))^2 x (3 \ln(x)-1)} & x \leq 1 \\ 0 & 1 < x \end{cases}$$

Mean

$$mu = 2/3 \sqrt{3} K_1 \left(2/3 \sqrt{3} \right) + 2/3 K_0 \left(2/3 \sqrt{3} \right)$$

Variance

$$sigma^2 = 4/3 K_0 \left(2/3 \sqrt{3} \sqrt{2} \right) + 2/3 \sqrt{3} \sqrt{2} K_1 \left(2/3 \sqrt{3} \sqrt{2} \right) - 4/3 \left(K_1 \left(2/3 \sqrt{3} \right) \right)^2 - \frac{8 K_1 \left(2/3 \sqrt{3} \right)}{3}$$

Moment Function

$$m(x) = 2/3 r K_0 \left(2/3 \sqrt{r} \sqrt{3} \right) + 2/3 \sqrt{r} \sqrt{3} K_1 \left(2/3 \sqrt{r} \sqrt{3} \right)$$

Moment Generating Function

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

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

Probability Distribution Function

$$f(x) = 1/9 e^{-1/3 e^x + 2x}$$

Cumulative Distribution Function

$$F(x) = 1 - e^{-1/3 e^x} - 1/3 e^{x-1/3 e^x}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \text{RootOf} \left(3 - Z - 3 \ln(3) - 3 \ln \left(1 - e^{-1/3 e^{-Z}} - s \right) - e^{-Z} \right)]$$

Survivor Function

$$S(x) = e^{-1/3 e^x} + 1/3 e^{x-1/3 e^x}$$

Hazard Function

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

Mean

$$\mu = \int_{-\infty}^{\infty} 1/9 x e^{-1/3 e^x + 2x} dx$$

Variance

$$\sigma^2 = \int_{-\infty}^{\infty} 1/9 x^2 e^{-1/3 e^x + 2x} dx - \left(\int_{-\infty}^{\infty} 1/9 x e^{-1/3 e^x + 2x} dx \right)^2$$

Moment Function

$$m(x) = \int_{-\infty}^{\infty} 1/9 x^r e^{-1/3 e^x + 2x} dx$$

Moment Generating Function

$$\int_{-\infty}^{\infty} 1/9 e^{tx-1/3 e^x + 2x} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{(e^x - 1)^3} e^{1/3 \frac{3xe^x - 3x - 1}{e^x - 1}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

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

Survivor Function

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

Hazard Function

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

Mean

$$\mu = \int_0^\infty 1/9 \frac{x}{(e^x - 1)^3} e^{1/3 \frac{3xe^x - 3x - 1}{e^x - 1}} dx$$

Variance

$$\sigma^2 = \int_0^\infty 1/9 \frac{x^2}{(e^x - 1)^3} e^{1/3 \frac{3xe^x - 3x - 1}{e^x - 1}} dx - \left(\int_0^\infty 1/9 \frac{x}{(e^x - 1)^3} e^{1/3 \frac{3xe^x - 3x - 1}{e^x - 1}} dx\right)^2$$

Moment Function

$$m(x) = \int_0^\infty 1/9 \frac{x^r}{(e^x - 1)^3} e^{1/3 \frac{3xe^x - 3x - 1}{e^x - 1}} dx$$

Moment Generating Function

$$\int_0^\infty 1/9 \frac{1}{(e^x - 1)^3} e^{1/3 \frac{3txe^x + 3xe^x - 3tx - 3x - 1}{e^x - 1}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{(e^{x^{-1}} - 2)^3 x^2} e^{1/3 \frac{-x+3e^{x^{-1}}-6}{(e^{x^{-1}}-2)x}}$$

Cumulative Distribution Function

$$F(x) = \begin{cases} -1/3 \frac{1}{e^{x^{-1}}-2} \left(-3e^{x^{-1}} + 3e^{1/3 \frac{-x+3e^{x^{-1}}-6}{(e^{x^{-1}}-2)x}} + 6 - 5e^{-1/3 (e^{x^{-1}}-2)^{-1}} \right) & x \leq (\ln(2))^{-1} \\ -\infty & (\ln(2))^{-1} < x \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto - \left(\ln(3) - \ln \left(\frac{6W((s-1)e^{-1}) + 5}{W((s-1)e^{-1}) + 1} \right) \right)^{-1}]$$

Survivor Function

$$S(x) = \begin{cases} 1/3 \frac{1}{e^{x^{-1}}-2} \left(3e^{1/3 \frac{-x+3e^{x^{-1}}-6}{(e^{x^{-1}}-2)x}} - 5e^{-1/3 (e^{x^{-1}}-2)^{-1}} \right) & x \leq (\ln(2))^{-1} \\ \infty & (\ln(2))^{-1} < x \end{cases}$$

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

Probability Distribution Function

$$f(x) = -1/9 \frac{1}{(\operatorname{arctanh}(x))^3 (x^2 - 1)} e^{-1/3 (\operatorname{arctanh}(x))^{-1}}$$

Cumulative Distribution Function

$$F(x) = -1/9 \int_0^x \frac{1}{(\operatorname{arctanh}(t))^3 (t^2 - 1)} e^{-1/3 (\operatorname{arctanh}(t))^{-1}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 + 1/9 \int_0^x \frac{1}{(\operatorname{arctanh}(t))^3 (t^2 - 1)} e^{-1/3 (\operatorname{arctanh}(t))^{-1}} dt$$

Hazard Function

$$h(x) = -\frac{1}{(\operatorname{arctanh}(x))^3 (x^2 - 1)} e^{-1/3 (\operatorname{arctanh}(x))^{-1}} \left(9 + \int_0^x \frac{1}{(\operatorname{arctanh}(t))^3 (t^2 - 1)} e^{-1/3 (\operatorname{arctanh}(t))^{-1}} dt \right)$$

Mean

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

Variance

$$sigma^2 = -1/9 \int_0^1 \frac{x^2}{(\operatorname{arctanh}(x))^3 (x^2 - 1)} e^{-1/3 (\operatorname{arctanh}(x))^{-1}} dx - \frac{1}{81} \left(\int_0^1 \frac{x}{(\operatorname{arctanh}(x))^3 (x^2 - 1)} e^{-1/3 (\operatorname{arctanh}(x))^{-1}} dx \right)^2$$

Moment Function

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

Moment Generating Function

$$-1/9 \int_0^1 \frac{1}{(\operatorname{arctanh}(x))^3 (x^2 - 1)} e^{1/3 \frac{3tx \operatorname{arctanh}(x) - 1}{\operatorname{arctanh}(x)}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{(\operatorname{arcsinh}(x))^3 \sqrt{x^2 + 1}} e^{-1/3 (\operatorname{arcsinh}(x))^{-1}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = \infty$$

Variance

$$sigma^2 = undefined$$

Moment Function

$$m(x) = \infty$$

Moment Generating Function

$$\int_0^\infty 1/9 \frac{1}{(\operatorname{arcsinh}(x))^3 \sqrt{x^2 + 1}} e^{1/3 \frac{3 t x \operatorname{arcsinh}(x) - 1}{\operatorname{arcsinh}(x)}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{\cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = []$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = \int_0^\infty 1/9 \frac{x \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx$$

Variance

$$sigma^2 = \int_0^\infty 1/9 \frac{x^2 \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx - \left(\int_0^\infty 1/9 \frac{x \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^\infty 1/9 \frac{x^r \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx$$

Moment Generating Function

$$\int_0^\infty 1/9 \frac{\cosh(x)}{(\sinh(x))^3} e^{1/3 \frac{3tx \sinh(x) - 1}{\sinh(x)}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{\sqrt{x^2 + 1} (-1 + \operatorname{arccsch}(x))^3 |x|} e^{-1/3 (-1 + \operatorname{arccsch}(x))^{-1}}$$

Cumulative Distribution Function

$$F(x) = 1/9 \int_0^x \frac{1}{\sqrt{t^2+1} (-1 + \operatorname{arccsch}(t))^3 |t|} e^{-1/3 (-1 + \operatorname{arccsch}(t))^{-1}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 1/9 \int_0^x \frac{1}{\sqrt{t^2+1} (-1 + \operatorname{arccsch}(t))^3 |t|} e^{-1/3 (-1 + \operatorname{arccsch}(t))^{-1}} dt$$

Hazard Function

$$h(x) = -\frac{1}{\sqrt{x^2+1} (-1 + \operatorname{arccsch}(x))^3 |x|} e^{-1/3 (-1 + \operatorname{arccsch}(x))^{-1}} \left(-9 + \int_0^x \frac{1}{\sqrt{t^2+1} (-1 + \operatorname{arccsch}(t))^3 |t|} e^{-1/3 (-1 + \operatorname{arccsch}(t))^{-1}} dt \right)$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$1/9 \int_0^{2 \frac{e}{e^2-1}} \frac{1}{\sqrt{x^2+1} (-1 + \operatorname{arccsch}(x))^3 x} e^{1/3 \frac{3tx \operatorname{arccsch}(x) - 3tx - 1}{-1 + \operatorname{arccsch}(x)}} dx$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \begin{cases} 1/3 \frac{1}{e^{2x}-2e^x-1} \left(3e^{2x} - 6e^x - 2e^{1/3 \frac{12xe^x-6xe^{2x}-e^{2x}+6x+1}{-e^{2x}+2e^x+1}} + 6e^{1/3 \frac{6xe^x-3xe^{2x}-e^{2x}+3x+1}{-e^{2x}+2e^x+1}} + 2e^x \right) \\ undefined \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto RootOf \left(-3se^{1/3 \frac{-6e^2-Z-Z-e^2-Z+12-Ze^{-Z}+6-Z+1}{-e^2-Z+2e^{-Z}+1}} + 6se^{1/3 \frac{6-Ze^{-Z}-3e^2-Z-Z-e^2-Z+3-Z+1}{-e^2-Z+2e^{-Z}+1}} + 3e^x \right)]$$

Survivor Function

$$S(x) = \begin{cases} 2/3 \frac{1}{e^{2x}-2e^x-1} \left(e^{1/3 \frac{-12xe^x+6xe^{2x}+e^{2x}-6x-1}{e^{2x}-2e^x-1}} - 3e^{1/3 \frac{-6xe^x+3xe^{2x}+e^{2x}-3x-1}{e^{2x}-2e^x-1}} - e^{1/3 \frac{e^{2x}-1}{e^{2x}-2e^x-1}} \right) \\ undefined \end{cases}$$

Hazard Function

$$h(x) = \begin{cases} -1/6 \frac{\cosh(x) \sinh(x) (e^{2x}-2e^x-1)}{\sinh(x) (\cosh(x))^2 - 3 (\cosh(x))^2 + 2 \sinh(x) + 2} e^{1/3 \frac{\sinh(x)}{\sinh(x)-1}} \left(e^{1/3 \frac{12xe^x-6xe^{2x}-e^{2x}+6x+1}{-e^{2x}+2e^x+1}} - 3e^{1/3 \frac{6xe^x-3xe^{2x}-e^{2x}+3x+1}{-e^{2x}+2e^x+1}} \right) \\ undefined \end{cases}$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$-1/18 \int_0^{\ln(1+\sqrt{2})} \frac{\sinh(2x)}{\sinh(x) (\cosh(x))^2 - 3 (\cosh(x))^2 + 2 \sinh(x) + 2} e^{1/3 \frac{3tx \sinh(x) - 3tx + \sinh(x)}{\sinh(x) - 1}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{(-1 + \operatorname{arctanh}(x^{-1}))^3 (x^2 - 1)} e^{-1/3 (-1 + \operatorname{arctanh}(x^{-1}))^{-1}}$$

Cumulative Distribution Function

$$F(x) = 1/9 \int_1^x \frac{1}{(-1 + \operatorname{arctanh}(t^{-1}))^3 (t^2 - 1)} e^{-1/3 (-1 + \operatorname{arctanh}(t^{-1}))^{-1}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 1/9 \int_1^x \frac{1}{(-1 + \operatorname{arctanh}(t^{-1}))^3 (t^2 - 1)} e^{-1/3 (-1 + \operatorname{arctanh}(t^{-1}))^{-1}} dt$$

Hazard Function

$$h(x) = -\frac{1}{(-1 + \operatorname{arctanh}(x^{-1}))^3 (x^2 - 1)} e^{-1/3 (-1 + \operatorname{arctanh}(x^{-1}))^{-1}} \left(-9 + \int_1^x \frac{1}{(-1 + \operatorname{arctanh}(t^{-1}))^3 (t^2 - 1)} e^{-1/3 (-1 + \operatorname{arctanh}(t^{-1}))^{-1}} dt \right)$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{\sqrt{x^2 + 1} (-1 + \operatorname{arcsinh}(x^{-1}))^3 |x|} e^{-1/3 (-1 + \operatorname{arcsinh}(x^{-1}))^{-1}}$$

Cumulative Distribution Function

$$F(x) = 1/9 \int_0^x \frac{1}{\sqrt{t^2 + 1} (-1 + \operatorname{arcsinh}(t^{-1}))^3 |t|} e^{-1/3 (-1 + \operatorname{arcsinh}(t^{-1}))^{-1}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 1/9 \int_0^x \frac{1}{\sqrt{t^2 + 1} (-1 + \operatorname{arcsinh}(t^{-1}))^3 |t|} e^{-1/3 (-1 + \operatorname{arcsinh}(t^{-1}))^{-1}} dt$$

Hazard Function

$$h(x) = -\frac{1}{\sqrt{x^2 + 1} (-1 + \operatorname{arcsinh}(x^{-1}))^3 |x|} e^{-1/3 (-1 + \operatorname{arcsinh}(x^{-1}))^{-1}} \left(-9 + \int_0^x \frac{1}{\sqrt{t^2 + 1} (-1 + \operatorname{arcsinh}(t^{-1}))^3 |t|} e^{-1/3 (-1 + \operatorname{arcsinh}(t^{-1}))^{-1}} dt \right)$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

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

$$F(x) = \begin{cases} 1/3 \, 1 \left(-3 e^{2/3 \frac{1}{x}} \left(-e^{x^{-1}} x + 3 e^{2 x^{-1}} - 6 e^{x^{-1}} - 3 \right) \left(e^{2 x^{-1}} - 2 e^{x^{-1}} - 1 \right)^{-1} - 3 + 3 e^{2 x^{-1}} - 6 e^{x^{-1}} + 4 e^{1/3} \right) \\ undefined \end{cases}$$
$$\left(\frac{e^{-Z} - 2/3 - 3e^{-Z} - 6e^{-Z} + 2e^{-Z} + 3e^{-Z}}{4e^{-Z} + 1} \right)^{-1} \frac{1}{-e^{-Z} - 2e^{-Z} + 1} \text{RootOf} \left(4e^{3e^{-Z} - 2/3 - 6e^{-Z} + 2e^{-Z} + 3e^{-Z}} - 8e^{1/3 - 3e^{-Z} - 6e^{-Z} + 2e^{-Z} + 3e^{-Z}} - e^{2/3 - 6e^{-Z} + 2e^{-Z} + 3e^{-Z}} - 1 \right) - 3e^{-Z}$$
$$S(x) = \begin{cases} -1/31 \left(-4e^{1/3 \frac{1}{x}} (2e^{x^{-1}}x + 6e^{x^{-1}} - 3e^{2x^{-1}} + 3) (-e^{2x^{-1}} + 2e^{x^{-1}} + 1)^{-1} - 3e^{2/3e^{x^{-1}}} (-e^{2x^{-1}} + 2e^{x^{-1}} + 1) \right) \\ undefined \end{cases}$$
$$h(x) = \begin{cases} 1/3 \frac{\cosh(x^{-1})}{x^2((\cosh(x^{-1}))^2 \sinh(x^{-1}) - 3(\cosh(x^{-1}))^2 + 2 \sinh(x^{-1}) + 2)} e^{-1/3(-1 + \sinh(x^{-1}))^{-1}} \left(-e^{2x^{-1}} + 2e^{x^{-1}}\right) \\ \text{undefined} \end{cases}$$
$$mu = 1/9 \int_0^{(\ln(1+\sqrt{2}))^{-1}} \frac{\cosh(x^{-1})}{x((\cosh(x^{-1}))^2 \sinh(x^{-1}) - 3(\cosh(x^{-1}))^2 + 2\sinh(x^{-1}) + 2)} e^{-1/3(-}$$
$$sigma^2 = 1/9 \int_0^{(\ln(1+\sqrt{2}))^{-1}} \frac{\cosh(x^{-1})}{(\cosh(x^{-1}))^2 \sinh(x^{-1}) - 3(\cosh(x^{-1}))^2 + 2\sinh(x^{-1}) + 2} e^{-1/3(-}$$
$$m(x) = \int_0^{(\ln(1+\sqrt{2}))^{-1}} \frac{1}{9} \frac{x^r \cosh(x^{-1})}{x^2 ((\cosh(x^{-1}))^2 \sinh(x^{-1}) - 3 (\cosh(x^{-1}))^2 + 2 \sinh(x^{-1}) + 2)} e^{-1/3}$$

Moment Generating Function

$$1/9 \int_0^{(\ln(1+\sqrt{2}))^{-1}} \frac{\cosh(x^{-1})}{x^2 ((\cosh(x^{-1}))^2 \sinh(x^{-1}) - 3 (\cosh(x^{-1}))^2 + 2 \sinh(x^{-1}) + 2)} e^{1/3 \frac{3 t x \sinh(x^{-1})}{-1 + \sinh(x^{-1})}} dx$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{1}{\sqrt{x^2 - 2x + 2} (\operatorname{arccsch}((x-1)^{-1}))^3} e^{-1/3 (\operatorname{arccsch}((x-1)^{-1}))^{-1}}$$

Cumulative Distribution Function

$$F(x) = 1/9 \int_1^x \frac{1}{\sqrt{t^2 - 2t + 2} (\operatorname{arccsch}((t-1)^{-1}))^3} e^{-1/3 (\operatorname{arccsch}((t-1)^{-1}))^{-1}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 1/9 \int_1^x \frac{1}{\sqrt{t^2 - 2t + 2} (\operatorname{arccsch}((t-1)^{-1}))^3} e^{-1/3 (\operatorname{arccsch}((t-1)^{-1}))^{-1}} dt$$

Hazard Function

$$h(x) = -\frac{1}{\sqrt{x^2 - 2x + 2} (\operatorname{arccsch}((x-1)^{-1}))^3} e^{-1/3 (\operatorname{arccsch}((x-1)^{-1}))^{-1}} \left(-9 + \int_1^x \frac{1}{\sqrt{t^2 - 2t + 2} (\operatorname{arccsch}((t-1)^{-1}))^3} e^{-1/3 (\operatorname{arccsch}((t-1)^{-1}))^{-1}} dt \right)$$

Mean

$$\mu = \infty$$

Variance

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

Moment Function

$$m(x) = \infty$$

Moment Generating Function

$$\int_1^{\infty} 1/9 \frac{1}{\sqrt{x^2 - 2x + 2} (\operatorname{arccsch}((x-1)^{-1}))^3} e^{\frac{1}{3} \frac{3tx \operatorname{arccsch}((x-1)^{-1}) - 1}{\operatorname{arccsch}((x-1)^{-1})}} dx_1$$

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

Probability Distribution Function

$$f(x) = -1/9 \frac{\operatorname{arctanh}(x)}{x^2 - 1} \frac{1}{\sqrt[3]{\frac{x+1}{\sqrt{-x^2+1}}}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto 1 \left(\left(\operatorname{RootOf} \left(\operatorname{arctanh} \left(\frac{-Z^6 - 1}{(-Z^2 + 1)(-Z^4 - Z^2 + 1)} \right) + 3sZ - 3Z + 3 \right) \right)^6 - 1 \right)$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = 1/9 \int_0^1 \frac{x \operatorname{arctanh}(x)}{\sqrt[3]{x+1} (-x^2+1)^{5/6}} dx$$

Variance

$$sigma^2 = 1/9 \int_0^1 \frac{x^2 \operatorname{arctanh}(x)}{\sqrt[3]{x+1} (-x^2+1)^{5/6}} dx - \frac{1}{81} \left(\int_0^1 \frac{x \operatorname{arctanh}(x)}{\sqrt[3]{x+1} (-x^2+1)^{5/6}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^1 -1/9 \frac{x^r \operatorname{arctanh}(x)}{x^2 - 1} \frac{1}{\sqrt[3]{\frac{x+1}{\sqrt{-x^2+1}}}} dx$$

Moment Generating Function

$$1/9 \int_0^1 \frac{e^{tx} \operatorname{arctanh}(x)}{\sqrt[3]{x+1} (-x^2+1)^{5/6}} dx_1$$

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

Probability Distribution Function

$$f(x) = 1/9 \frac{\operatorname{arccsch}(x)}{\sqrt{x^2+1} |x|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(x)\sqrt{x^2+1}+1}{x}}}$$

Cumulative Distribution Function

$$F(x) = 1/9 \int_0^x \frac{\operatorname{arccsch}(t)}{\sqrt{t^2+1} |t|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(t)\sqrt{t^2+1}+1}{t}}} dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 - 1/9 \int_0^x \frac{\operatorname{arccsch}(t)}{\sqrt{t^2+1} |t|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(t)\sqrt{t^2+1}+1}{t}}} dt$$

Hazard Function

$$h(x) = -\frac{\operatorname{arccsch}(x)}{\sqrt{x^2+1} |x|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(x)\sqrt{x^2+1}+1}{x}}} \left(-9 + \int_0^x \frac{\operatorname{arccsch}(t)}{\sqrt{t^2+1} |t|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(t)\sqrt{t^2+1}+1}{t}}} dt \right)^{-1}$$

Mean

$$mu = \int_0^\infty 1/9 \frac{\operatorname{arccsch}(x) \sqrt[3]{x}}{\sqrt[3]{\sqrt{x^2+1}+1} \sqrt{x^2+1}} dx$$

Variance

$$\sigma^2 = \infty - \left(\int_0^\infty \frac{1}{9} \frac{\operatorname{arccsch}(x) \sqrt[3]{x}}{\sqrt[3]{\sqrt{x^2+1}+1} \sqrt{x^2+1}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^\infty \frac{1}{9} \frac{x^r \operatorname{arccsch}(x)}{\sqrt{x^2+1} |x|} \frac{1}{\sqrt[3]{\frac{\operatorname{signum}(x)\sqrt{x^2+1}+1}{x}}} dx$$

Moment Generating Function

$$\int_0^\infty \frac{1}{9} \frac{e^{tx} \operatorname{arccsch}(x)}{\sqrt[3]{\sqrt{x^2+1}+1} x^{2/3} \sqrt{x^2+1}} dx_1$$

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

Probability Distribution Function

$$f(x) = \frac{1}{9} \frac{\cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = []$$

Survivor Function

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

Hazard Function

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

Mean

$$\mu = \int_0^{\infty} \frac{1}{9} \frac{x \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx$$

Variance

$$\sigma^2 = \int_0^{\infty} \frac{1}{9} \frac{x^2 \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx - \left(\int_0^{\infty} \frac{1}{9} \frac{x \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{\infty} \frac{1}{9} \frac{x^r \cosh(x)}{(\sinh(x))^3} e^{-1/3 (\sinh(x))^{-1}} dx$$

Moment Generating Function

$$\int_0^{\infty} \frac{1}{9} \frac{\cosh(x)}{(\sinh(x))^3} e^{1/3 \frac{3tx \sinh(x)-1}{\sinh(x)}} dx_1$$