

"HypoExponentialRV(1,2,3)"

$$[z \mapsto 3 \left(e^{2z} - 2 e^z + 1 \right) e^{-3z}]$$

$$t \mapsto t^2$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$\mu = \frac{85}{18}$$

Variance

$$\sigma^2 = \frac{14741}{324}$$

Moment Function

$$m(x) = 3 \left(-1 \right)^{-4r} \Gamma \left(1 + 2r \right) - 3 2^{-2r} \Gamma \left(1 + 2r \right) + 3^{-2r} \Gamma \left(1 + 2r \right)$$

Moment Generating Function

$$\lim_{x \rightarrow \infty} -3/2 \frac{\sqrt{\pi}}{\sqrt{-t}} \left(\operatorname{erf} \left(1/2 \frac{2t\sqrt{x} - 1}{\sqrt{-t}} \right) e^{2t^{-1}} + e^{2t^{-1}} \operatorname{erf} \left(1/2 \frac{1}{\sqrt{-t}} \right) - 2 \operatorname{erf} \left(\frac{t\sqrt{x} - 1}{\sqrt{-t}} \right) e^{5/4t^{-1}} - \right.$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

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

Survivor Function

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

Hazard Function

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

Mean

$$\mu = 6 \ln(2) - 3 \ln(3)$$

Variance

$$\sigma^2 = -12 \ln(2) + 9 \ln(3) - (6 \ln(2) - 3 \ln(3))^2$$

Moment Function

$$m(x) = 3(-1)^{2^r} \Gamma(1-r) - 32^r \Gamma(1-r) + 3^r \Gamma(1-r)$$

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \begin{cases} (e^{3 \tan(x)} - 3e^{2 \tan(x)} + 3e^{\tan(x)} - 1) e^{-3 \tan(x)} & x \leq \pi/2 \\ \infty & \pi/2 < x \end{cases}$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = \begin{cases} (3e^{2 \tan(x)} - 3e^{\tan(x)} + 1) e^{-3 \tan(x)} & x \leq \pi/2 \\ -\infty & \pi/2 < x \end{cases}$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

$$t \mapsto e^t$$

Probability Distribution Function

$$f(x) = 3 \frac{x^2 - 2x + 1}{x^4}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

$$\mu = \infty$$

Variance

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

Moment Function

$$m(x) = \lim_{x \rightarrow \infty} 3 \frac{x^{-3+r} r^2 x^2 - 2x^{-3+r} r^2 x - 5x^{-3+r} r x^2 + r^2 x^{-3+r} + 8x^{-3+r} r x + 6x^{-3+r} x^2 - 3r x^{-3+r}}{(r-1)(-2+r)(-3+r)}$$

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = (3e^{2e^x} - 3e^{e^x} + 1)e^{-3e^x}$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

$$f(x) = 3x^2 - 6x + 3$$

Cumulative Distribution Function

$$F(x) = x^3 - 3x^2 + 3x$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = -x^3 + 3x^2 - 3x + 1$$

Hazard Function

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

Mean

$$\mu = 1/4$$

Variance

$$\sigma^2 = \frac{3}{80}$$

Moment Function

$$m(x) = 6(r^3 + 6r^2 + 11r + 6)^{-1}$$

Moment Generating Function

$$3 \frac{-t^2 + 2e^t - 2t - 2}{t^3} \Big|_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

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

Survivor Function

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

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$\int_{-\infty}^{\infty} 3 \left(e^{2e^{-x}} - 2e^{e^{-x}} + 1 \right) e^{tx-3e^{-x}-x} dx_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 3e^{1-e^x} - 3e^{2-2e^x} + e^{3-3e^x}$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

$$f(x) = 3 \frac{e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1}{x^2} e^{-\frac{3e^{x^{-1}}x-6x-1}{x}}$$

Cumulative Distribution Function

$$F(x) = \left(3e^{2+2e^{x^{-1}}} - 3e^{4+e^{x^{-1}}} + e^6 \right) e^{-3e^{x^{-1}}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto - \left(\ln(3) - \ln \left(6 - \ln(2) + 3 \ln \left(-\frac{2^{2/3}s - 2^{2/3} - \sqrt[3]{2}\sqrt[3]{(s-1)}(csgn(s-1)s + s}{\sqrt[3]{(s-1)}(csgn(s-1)s + s)} \right) \right) \right)$$

Survivor Function

$$S(x) = -3e^{-e^{x^{-1}}+2} + 3e^{-2e^{x^{-1}}+4} - e^{-3e^{x^{-1}}+6} + 1$$

Hazard Function

$$h(x) = -3 \frac{e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1}{x^2 \left(3e^{-e^{x^{-1}}+2} - 3e^{-2e^{x^{-1}}+4} + e^{-3e^{x^{-1}}+6} - 1 \right)} e^{-\frac{3e^{x^{-1}}x-6x-1}{x}}$$

Mean

$$\mu = 3 \int_0^{(\ln(2))^{-1}} \frac{e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1}{x} e^{-\frac{3e^{x^{-1}}x-6x-1}{x}} dx$$

Variance

$$\sigma^2 = 3 \int_0^{(\ln(2))^{-1}} \left(e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1 \right) e^{-\frac{3e^{x^{-1}}x-6x-1}{x}} dx - 9 \left(\int_0^{(\ln(2))^{-1}} \frac{e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1}{x} e^{-\frac{3e^{x^{-1}}x-6x-1}{x}} dx \right)^2$$

Moment Function

$$m(x) = \int_0^{(\ln(2))^{-1}} \frac{x^r \left(e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1 \right)}{3x^2} e^{-\frac{3e^{x^{-1}}x-6x-1}{x}} dx$$

Moment Generating Function

$$3 \int_0^{(\ln(2))^{-1}} \frac{e^{2e^{x^{-1}}-4} - 2e^{e^{x^{-1}}-2} + 1}{x^2} e^{-\frac{-tx^2+3e^{x^{-1}}x-6x-1}{x}} dx_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \frac{2^{2/3} (s (\operatorname{csgn}(s+8)) s^3 + 12 \operatorname{csgn}(s+8) s^2 + s^3 + 40 s \operatorname{csgn}(s+8) + 12 s^2 + 64 \operatorname{csgn}(s+8))}{\sqrt[3]{s (\operatorname{csgn}(s+8)) s^3 + 12 \operatorname{csgn}(s+8) s^2 + s^3 + 40 s \operatorname{csgn}(s+8) + 12 s^2 + 64 \operatorname{csgn}(s+8)}}]$$

Survivor Function

$$S(x) = \frac{2\sqrt{-x^2+1}x + 3x^2 + 4\sqrt{-x^2+1} - 3}{x^2 + 2x + 1}$$

Hazard Function

$$h(x) = -6 \frac{x^2 + \sqrt{-x^2+1} - 1}{(2\sqrt{-x^2+1}x + 3x^2 + 4\sqrt{-x^2+1} - 3)(x^2 - 1)}$$

Mean

$$\mu = 5 - 6 \ln(2)$$

Variance

$$\sigma^2 = -36 (\ln(2))^2 + 3\pi + 72 \ln(2) - 42$$

Moment Function

$$m(x) = \int_0^1 -6 \frac{x^r (x^2 + \sqrt{-x^2+1} - 1)}{(x-1)(x+1)^3} dx$$

Moment Generating Function

$$-6 \int_0^1 \frac{e^{tx} (x^2 + \sqrt{-x^2+1} - 1)}{(x-1)(x+1)^3} dx_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = 4 - 4\sqrt{x^2+1}x^2 - 4\sqrt{x^2+1} + 4x^3 - 6x\sqrt{x^2+1} + 6x^2 + 6x$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = -3 + 4\sqrt{x^2+1}x^2 + 4\sqrt{x^2+1} - 4x^3 + 6x\sqrt{x^2+1} - 6x^2 - 6x$$

Hazard Function

$$h(x) = 6 \frac{x\sqrt{x^2+1} + x^2 - \sqrt{x^2+1} - x + 1}{(x + \sqrt{x^2+1})^3 \sqrt{x^2+1} (-3 + 4\sqrt{x^2+1}x^2 + 4\sqrt{x^2+1} - 4x^3 + 6x\sqrt{x^2+1} - 6x^2 - 6x)}$$

Mean

$$\mu = \infty$$

Variance

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

Moment Function

$$m(x) = 18 \frac{\Gamma(1/2 - r/2) \Gamma(1 + r/2)}{\sqrt{\pi} (r+3) (5+r)} + 9/2 \frac{1}{\pi} \left(2/3 \sqrt{\pi} \Gamma(3/2 + r/2) \Gamma(-r/2 - 1) {}_3F_2(-3/2, 3/2, \dots) \right)$$

Moment Generating Function

$$\int_0^\infty 6 \frac{e^{tx} (x\sqrt{x^2+1} + x^2 - \sqrt{x^2+1} - x + 1)}{(x + \sqrt{x^2+1})^3 \sqrt{x^2+1}} dx_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

$$\int_0^\infty 3 (e^{2 \sinh(x)} - 2 e^{\sinh(x)} + 1) \cosh(x) e^{tx - 3 \sinh(x)} \, dx$$

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

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

Mean

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

Variance

$$\sigma^2 = 3 \int_1^{\frac{e^2+1}{e^2-1}} \frac{x^2 \left(e^{-2+2 \operatorname{arctanh}(x^{-1})} - 2e^{-1+\operatorname{arctanh}(x^{-1})} + 1\right) e^{3-3 \operatorname{arctanh}(x^{-1})}}{x^2 - 1} dx - 9 \left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x \left(e^{-2+2 \operatorname{arctanh}(x^{-1})} - 2e^{-1+\operatorname{arctanh}(x^{-1})} + 1\right) e^{3-3 \operatorname{arctanh}(x^{-1})}}{x^2 - 1} dx\right)^2$$

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \frac{ex \left(e^2 x^2 - 3 e \sqrt{x^2+1} x - 3 ex + 3 x^2 + 6 \sqrt{x^2+1} + 6 \right)}{\sqrt{x^2+1} x^2 + 4 \sqrt{x^2+1} + 3 x^2 + 4}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto - \frac{e \left(6 \sqrt[3]{2} e^6 s - 6 e^6 \sqrt[3]{2} + 2 \sqrt[3]{2} e^4 s^2 - 2 \sqrt[3]{2} e^4 s + 2 e^4 \sqrt[3]{e^{12} s - e^{12} - 3 e^8 s^2 + 3 e^8 s + 2} \right)}{\sqrt{x^2+1} x^2 + 4 \sqrt{x^2+1} + 3 x^2 + 4}]$$

Survivor Function

$$S(x) = \frac{-e^3 x^3 + 3 e^2 \sqrt{x^2+1} x^2 + 3 e^2 x^2 - 3 ex^3 - 6 e \sqrt{x^2+1} x + \sqrt{x^2+1} x^2 - 6 ex + 3 x^2 + 4 \sqrt{x^2+1}}{\sqrt{x^2+1} x^2 + 4 \sqrt{x^2+1} + 3 x^2 + 4}$$

Hazard Function

$$h(x) = 3 \frac{\left(e^{-2+2 \operatorname{arcsinh}(x^{-1})} - 2 e^{-1+\operatorname{arcsinh}(x^{-1})} + 1 \right) e^{3-3 \operatorname{arcsinh}(x^{-1})} (\sqrt{x^2+1} x^2 + 4 \sqrt{x^2+1})}{\sqrt{x^2+1} |x| (-e^3 x^3 + 3 e^2 \sqrt{x^2+1} x^2 + 3 e^2 x^2 - 3 ex^3 - 6 e \sqrt{x^2+1} x + \sqrt{x^2+1} x^2 - 6 ex + 3 x^2 + 4 \sqrt{x^2+1})}$$

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = - \left(3 e^{1/2 (3 e^{2x^{-1}} + 4 e^{x^{-1}} + 2)} e^{-x^{-1}} - 3 e^{1/2 (4 e^{2x^{-1}} + 2 e^{x^{-1}} + 1)} e^{-x^{-1}} - e^{1/2 (2 e^{2x^{-1}} + 6 e^{x^{-1}} + 3)} e^{-x^{-1}} \right)$$

Inverse Cumulative Distribution Function

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

Survivor Function

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

Hazard Function

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

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = -6x^2 + 2x\sqrt{x^2 - 2x + 2} - 2\sqrt{x^2 - 2x + 2} + 6x - 4\sqrt{x^2 - 2x + 2}x^2 + 4x^3$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = 1 + 6x^2 - 2x\sqrt{x^2 - 2x + 2} + 2\sqrt{x^2 - 2x + 2} - 6x + 4\sqrt{x^2 - 2x + 2}x^2 - 4x^3$$

Hazard Function

$$h(x) = 6 \frac{x\sqrt{x^2 - 2x + 2} + x^2 - 2\sqrt{x^2 - 2x + 2} - 3x + 3}{\sqrt{x^2 - 2x + 2} (x - 1 + \sqrt{x^2 - 2x + 2})^3 (1 + 6x^2 - 2x\sqrt{x^2 - 2x + 2} + 2\sqrt{x^2 - 2x + 2}x^2 - 4x^3)}$$

Mean

$$\mu = \infty$$

Variance

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

Moment Function

$$m(x) = \int_1^\infty 6 \frac{x^r (x\sqrt{x^2 - 2x + 2} + x^2 - 2\sqrt{x^2 - 2x + 2} - 3x + 3)}{\sqrt{x^2 - 2x + 2} (x - 1 + \sqrt{x^2 - 2x + 2})^3} dx$$

Moment Generating Function

$$\int_1^\infty 6 \frac{e^{tx} (x\sqrt{x^2 - 2x + 2} + x^2 - 2\sqrt{x^2 - 2x + 2} - 3x + 3)}{\sqrt{x^2 - 2x + 2} (x - 1 + \sqrt{x^2 - 2x + 2})^3} dx_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \left(3e^{4(\ln(x+1)-\ln(1-x))^{-1}} - 3e^{2(\ln(x+1)-\ln(1-x))^{-1}} + 1 \right) e^{-6(\ln(x+1)-\ln(1-x))^{-1}}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto 1 \left(e^{-6 \left(\ln(2) - 3 \ln \left(-\frac{2^{2/3}s - 2^{2/3} - \sqrt[3]{2} \sqrt[3]{(s-1)(\operatorname{csgn}(s-1)s+s-2)} - ((s-1)(\operatorname{csgn}(s-1)s+s-2))^{2/3}}}{\sqrt[3]{(s-1)(\operatorname{csgn}(s-1)s+s-2)s}} \right)} \right)^{-1} - 1 \right) \left(e^{-6 \right.$$

Survivor Function

$$S(x) = \left(e^{6(\ln(x+1)-\ln(1-x))^{-1}} - 3e^{4(\ln(x+1)-\ln(1-x))^{-1}} + 3e^{2(\ln(x+1)-\ln(1-x))^{-1}} - 1 \right) e^{-6(\ln(x+1)-\ln(1-x))^{-1}}$$

Hazard Function

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

Mean

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

Variance

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

Moment Function

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

Moment Generating Function

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