"ArcSinRV()"

$$[x \mapsto \frac{1}{\pi\sqrt{x(1-x)}}]$$

---

$$t \mapsto t^2$$

Probability Distribution Function

$$f(x) = 1/2\,\frac{1}{\sqrt{-\sqrt{x}\,(-1+\sqrt{x})}\sqrt{x}\pi}$$

Cumulative Distribution Function

$$F(x) = \begin{cases} \frac{i\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\ln(2)+\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\pi-\sqrt{x}\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})+x\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{}}{\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\pi} \\ \frac{i(-ix\pi+i\sqrt{x}\pi+\sqrt{x}\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})-x\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}}))}{\sqrt{x}(-1+\sqrt{x})\pi} \end{cases}$$

Inverse Cumulative Distribution Function

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

Survivor Function

$$S(x) = \begin{cases} -\frac{i\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\ln(2)+\sqrt{x}\ln(2)-x\ln(2)-\sqrt{x}\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})+x\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+}}{\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\pi} \\ \frac{-i\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})(\sqrt{x}-x)}{\sqrt{x}(-1+\sqrt{x})\pi} \end{cases}$$

Hazard Function

$$h(x) = \begin{cases} -1/2\,\frac{\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}}{\sqrt{-\sqrt{x}(-1+\sqrt{x})}(i\sqrt{x}\sqrt{1-\sqrt{x}}\sqrt{-1+\sqrt{x}}\ln(2)+\sqrt{x}\ln(2)-x\ln(2)-\sqrt{x}\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})+x\ln(} \\ 1/2\,\frac{\sqrt{-1+\sqrt{x}}}{\sqrt[4]{x}\ln(-1+2\sqrt{x}+2\sqrt[4]{x}\sqrt{-1+\sqrt{x}})(\sqrt{x}-x)} \end{cases}$$

Mean

$$mu = 3/8$$

Variance

$$sigma^2 = \frac{17}{128}$$

Moment Function

$$m(x) = 2\,\frac{\Gamma\left(3/2 + 2\,r\right)}{\sqrt{\pi}\left(4\,r + 1\right)\Gamma\left(2\,r + 1\right)}$$

Moment Generating Function

$${}_2\mathrm{F}_2(1/4, 3/4;\ 1/2, 1;\ t)_1$$

---

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

Probability Distribution Function

$$f(x) = 2\,\frac{signum\left(x\right)}{\sqrt{-x^2 + 1}\pi}$$

Cumulative Distribution Function

$$F(x) = 2\,\frac{\arcsin\left(x\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = \left[s \mapsto \sin\left(1/2\,s\pi\right)\right]$$

Survivor Function

$$S(x) = 1 - 2\,\frac{\arcsin\left(x\right)}{\pi}$$

Hazard Function

$$h(x) = 2\,\frac{signum\left(x\right)}{\sqrt{-x^2 + 1}\left(\pi - 2\,\arcsin\left(x\right)\right)}$$

Mean

$$mu = 2\,\pi^{-1}$$

Variance

$$sigma^2 = 1/2 - 4\,\pi^{-2}$$

Moment Function

$$m(x) = 2\,\frac{\Gamma\left(3/2 + r/2\right)}{\sqrt{\pi}\left(1 + r\right)\Gamma\left(1 + r/2\right)}$$

Moment Generating Function

$$I_0(t) + \mathbf{L}_0(t)_1$$

---

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

Probability Distribution Function

$$f(x) = \frac{1}{\sqrt{x-1}\pi \ |x|}$$

Cumulative Distribution Function

$$F(x) = 2\,\frac{\arctan\left(\sqrt{x-1}\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto (\cos(1/2\,s\pi))^{-2}]$$

Survivor Function

$$S(x) = \frac{\pi - 2\,\arctan\left(\sqrt{x-1}\right)}{\pi}$$

Hazard Function

$$h(x) = \frac{1}{\sqrt{x-1}\,|x|\left(\pi - 2\,\arctan\left(\sqrt{x-1}\right)\right)}$$

Mean

$$mu = \infty$$

Variance

$$sigma^2 = undefined$$

Moment Function

$$m(x) = \int_1^\infty \frac{x^r}{\sqrt{x-1}\pi \ |x|}\,\mathrm{d}x$$

Moment Generating Function

$$-\frac{\sqrt{-t}erfi\left(\sqrt{t}\right) - \sqrt{t}}{\sqrt{t}}_1$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \begin{cases} 1/2\, \frac{\pi + 2\, \arcsin(-1 + 2\, \tan(x))}{\pi} & x \leq \pi/2 \\ -1/2\, \frac{i\infty - \pi - 2\, \Re(\arcsin(-1 + 2\, \tan(x)))}{\pi} & \pi/2 < x \end{cases}$$

Inverse Cumulative Distribution Function

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

Survivor Function

$$S(x) = \begin{cases} -1/2\, \frac{-\pi + 2\, \arcsin(-1 + 2\, \tan(x))}{\pi} & x \leq \pi/2 \\ 1/2\, \frac{i\infty + \pi - 2\, \Re(\arcsin(-1 + 2\, \tan(x)))}{\pi} & \pi/2 < x \end{cases}$$

Hazard Function

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

Mean

$$mu = \frac{1}{\pi} \int_0^{\pi/4} \frac{x}{\cos(x) \sqrt{\sin(x)} \sqrt{\cos(x) - \sin(x)}}\, \mathrm{d}x$$

Variance

$$sigma^2 = \frac{1}{\pi^2} \left( - \left( \int_0^{\pi/4} \frac{x}{\cos(x) \sqrt{\sin(x)} \sqrt{\cos(x) - \sin(x)}}\, \mathrm{d}x \right)^2 + \int_0^{\pi/4} \frac{x^2}{\cos(x) \sqrt{\sin(x)} \sqrt{\cos(}}\right.$$

Moment Function

$$m(x) = \int_0^{\pi/4} \frac{x^r \left(1 + (\tan(x))^2\right)}{\pi \sqrt{-\tan(x)(-1 + \tan(x))}}\, \mathrm{d}x$$

Moment Generating Function

$$\frac{1}{\pi}\int_0^{\pi/4} \frac{\mathrm{e}^{tx}}{\cos(x)\sqrt{\sin(x)}\sqrt{\cos(x)-\sin(x)}}\,\mathrm{d}x_{\;1}$$

---

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

Probability Distribution Function

$$f(x) = \frac{1}{\pi\sqrt{-\ln(x)(-1+\ln(x))}x}$$

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{\pi + 2\,\arcsin(-1+2\,\ln(x))}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = \left[s \mapsto \mathrm{e}^{-1/2\,\cos(s\pi)+1/2}\right]$$

Survivor Function

$$S(x) = 1/2\,\frac{\pi - 2\,\arcsin(-1+2\,\ln(x))}{\pi}$$

Hazard Function

$$h(x) = 2\,\frac{1}{\sqrt{-\ln(x)(-1+\ln(x))}x\,(\pi - 2\,\arcsin(-1+2\,\ln(x)))}$$

Mean

$$mu = \frac{1}{\pi}\int_1^{\mathrm{e}} \frac{1}{\sqrt{1-\ln(x)}\sqrt{\ln(x)}}\,\mathrm{d}x$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_1^{\mathrm{e}} \frac{x}{\sqrt{1-\ln(x)}\sqrt{\ln(x)}}\,\mathrm{d}x\pi - \left(\int_1^{\mathrm{e}} \frac{1}{\sqrt{1-\ln(x)}\sqrt{\ln(x)}}\,\mathrm{d}x\right)^2\right)$$

Moment Function

$$m(x) = \int_1^{\mathrm{e}} \frac{x^r}{\pi\sqrt{-\ln(x)(-1+\ln(x))}x}\,\mathrm{d}x$$

Moment Generating Function

$$\frac{1}{\pi}\int_{1}^{\mathrm{e}}\frac{\mathrm{e}^{tx}}{\sqrt{1-\ln(x)}\sqrt{\ln(x)}x}\,\mathrm{d}x \quad {}_{1}$$

---

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{\pi + 2\,\arcsin(2\,\mathrm{e}^{x}-1)}{\pi}$$

Inverse Cumulative Distribution Function

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

Survivor Function

$$S(x) = 1/2\,\frac{\pi - 2\,\arcsin(2\,\mathrm{e}^{x}-1)}{\pi}$$

Hazard Function

$$h(x) = -2\,\frac{\mathrm{e}^{x/2}}{\sqrt{1-\mathrm{e}^{x}}\,(-\pi + 2\,\arcsin(2\,\mathrm{e}^{x}-1))}$$

Mean

$$mu = \int_{-\infty}^{0}\frac{x\mathrm{e}^{x/2}}{\sqrt{1-\mathrm{e}^{x}}\pi}\,\mathrm{d}x$$

Variance

$$sigma^2 = \int_{-\infty}^{0}\frac{x^2\mathrm{e}^{x/2}}{\sqrt{1-\mathrm{e}^{x}}\pi}\,\mathrm{d}x - \left(\int_{-\infty}^{0}\frac{x\mathrm{e}^{x/2}}{\sqrt{1-\mathrm{e}^{x}}\pi}\,\mathrm{d}x\right)^2$$

Moment Function

$$m(x) = \int_{-\infty}^{0}\frac{x^r\mathrm{e}^{x/2}}{\sqrt{1-\mathrm{e}^{x}}\pi}\,\mathrm{d}x$$

Moment Generating Function

$$\int_{-\infty}^{0} \frac{e^{1/2\,x(2\,t+1)}}{\sqrt{1-e^{x}}\pi}\,dx_1$$

---

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

Probability Distribution Function

$$f(x) = \frac{1}{\pi\,\sqrt{-\ln(x)\,(1+\ln(x))}x}$$

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{\pi + 2\,\arcsin(1+2\,\ln(x))}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto e^{-1/2\,\cos(s\pi)-1/2}]$$

Survivor Function

$$S(x) = 1/2\,\frac{\pi - 2\,\arcsin(1+2\,\ln(x))}{\pi}$$

Hazard Function

$$h(x) = 2\,\frac{1}{\sqrt{-\ln(x)\,(1+\ln(x))}x\,(\pi - 2\,\arcsin(1+2\,\ln(x)))}$$

Mean

$$mu = e^{-1/2}I_0(1/2)$$

Variance

$$sigma^2 = e^{-1}\left(-(I_0(1/2))^2 + I_0(1)\right)$$

Moment Function

$$m(x) = e^{-r/2}I_0(r/2)$$

Moment Generating Function

$$\frac{1}{\pi}\int_{e^{-1}}^{1} \frac{e^{tx}}{\sqrt{1+\ln(x)}\sqrt{-\ln(x)}x}\,dx_{\;1}$$

---

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \ln\left((\cos(1/2\,s\pi))^{-2}\right)]$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = 2\,\ln(2)$$

Variance

$$sigma^2 = 1/3\,\pi^2$$

Moment Function

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

Moment Generating Function

$$\int_0^\infty \frac{e^{1/2\,x(2\,t-1)}}{\sqrt{1 - e^{-x}}\pi}\,dx_1$$

---

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

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

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

Survivor Function

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

Hazard Function

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

Mean

$$mu = \frac{1}{\pi}\int_0^{\ln(2)} \frac{xe^x}{\sqrt{-1+e^x}\sqrt{2-e^x}}\,dx$$

Variance

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

Moment Function

$$m(x) = \int_0^{\ln(2)} \frac{x^re^x}{\sqrt{-(-1+e^x)(-2+e^x)}\pi}\,dx$$

Moment Generating Function

$$\frac{1}{\pi}\int_0^{\ln(2)} \frac{e^{x(t+1)}}{\sqrt{-1+e^x}\sqrt{2-e^x}}\,dx_{1}$$

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = -1/2\, \frac{-\pi + 2\,\arcsin\left(-5+2\,e^{x^{-1}}\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto (-\ln(2) + \ln(\cos(s\pi)+5))^{-1}]$$

Survivor Function

$$S(x) = 1/2\, \frac{\pi + 2\,\arcsin\left(-5+2\,e^{x^{-1}}\right)}{\pi}$$

Hazard Function

$$h(x) = 2\, \frac{e^{x^{-1}}}{\sqrt{-\left(e^{x^{-1}}-2\right)\left(-3+e^{x^{-1}}\right)}x^2\left(\pi + 2\,\arcsin\left(-5+2\,e^{x^{-1}}\right)\right)}$$

Mean

$$mu = \frac{1}{\pi}\int_{(\ln(3))^{-1}}^{(\ln(2))^{-1}} \frac{e^{x^{-1}}}{x\sqrt{e^{x^{-1}}-2}\sqrt{3-e^{x^{-1}}}}\,dx$$

Variance

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

Moment Function

$$m(x) = \int_{(\ln(3))^{-1}}^{(\ln(2))^{-1}} \frac{x^r e^{x^{-1}}}{\sqrt{-\left(e^{x^{-1}}-2\right)\left(-3+e^{x^{-1}}\right)}\pi\, x^2}\,dx$$

Moment Generating Function

$$\frac{1}{\pi}\int_{(\ln(3))^{-1}}^{(\ln(2))^{-1}}\frac{1}{\sqrt{e^{x^{-1}}-2}\sqrt{3-e^{x^{-1}}}x^2}e^{\frac{tx^2+1}{x}}\,dx$$

1

---

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

Probability Distribution Function

$$f(x)=-\frac{1}{\pi\sqrt{-\operatorname{arctanh}(x)(-1+\operatorname{arctanh}(x))}(x^2-1)}$$

Cumulative Distribution Function

$$F(x)=-\frac{1}{\pi}\int_0^x\frac{1}{\sqrt{-\operatorname{arctanh}(t)(-1+\operatorname{arctanh}(t))}(t^2-1)}\,dt$$

Inverse Cumulative Distribution Function

$$F^{-1}=$$

Survivor Function

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

Hazard Function

$$h(x)=-\frac{1}{\sqrt{-\operatorname{arctanh}(x)(-1+\operatorname{arctanh}(x))}(x^2-1)}\left(\pi+\int_0^x\frac{1}{\sqrt{-\operatorname{arctanh}(t)(-1+\operatorname{arctanh}(t)}}\right.$$

Mean

$$mu=-\frac{1}{\pi}\int_0^{\tanh(1)}\frac{x}{\sqrt{\operatorname{arctanh}(x)}\sqrt{1-\operatorname{arctanh}(x)}(x^2-1)}\,dx$$

Variance

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

Moment Function

$$m(x) = \int_0^{\tanh(1)} -\frac{x^r}{\pi\,\sqrt{-\operatorname{arctanh}(x)\,(-1+\operatorname{arctanh}(x))}\,(x^2-1)}\,\mathrm{d}x$$

Moment Generating Function

$$\frac{\left. -\frac{1}{\pi}\int_0^{\tanh(1)} \frac{\mathrm{e}^{tx}}{\sqrt{\operatorname{arctanh}(x)}\sqrt{1-\operatorname{arctanh}(x)}\,(x^2-1)}\,\mathrm{d}x \right._{1}}{t \mapsto \sinh(t)}$$

Probability Distribution Function

$$f(x) = \frac{1}{\pi\,\sqrt{-\operatorname{arcsinh}(x)\,(-1+\operatorname{arcsinh}(x))}\sqrt{x^2+1}}$$

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{\pi - 2\,\arcsin\left(1+2\,\ln\left(-x+\sqrt{x^2+1}\right)\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -1/2\,\left(\mathrm{e}^{\cos(s\pi)-1}-1\right)\mathrm{e}^{-1/2\,\cos(s\pi)+1/2}]$$

Survivor Function

$$S(x) = 1/2\,\frac{\pi + 2\,\arcsin\left(1+2\,\ln\left(-x+\sqrt{x^2+1}\right)\right)}{\pi}$$

Hazard Function

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

Mean

$$mu = \frac{1}{\pi}\int_0^{\sinh(1)} \frac{x}{\sqrt{\operatorname{arcsinh}(x)}\sqrt{1-\operatorname{arcsinh}(x)}\sqrt{x^2+1}}\,\mathrm{d}x$$

Variance

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

Moment Function

$$m(x) = \int_0^{\sinh(1)} \frac{x^r}{\pi \sqrt{-\operatorname{arcsinh}(x) \left(-1 + \operatorname{arcsinh}(x)\right)} \sqrt{x^2+1}} \, \mathrm{d}x$$

Moment Generating Function

$$\frac{1}{\pi} \int_0^{\sinh(1)} \frac{\mathrm{e}^{tx}}{\sqrt{\operatorname{arcsinh}(x)} \sqrt{1 - \operatorname{arcsinh}(x)} \sqrt{x^2+1}} \, \mathrm{d}x_{1}$$

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-

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

Probability Distribution Function

$$f(x) = \frac{\cosh(x)}{\sqrt{-\sinh(x) \left(-1 + \sinh(x)\right)} \pi}$$

Cumulative Distribution Function

$$F(x) = 1/2 \, \frac{\pi + 2 \, \arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(2) + \ln\left(-\cos(s\pi) + 1 + \sqrt{\left(\cos(s\pi)\right)^2 - 2 \, \cos(s\pi) + 5}\right)]$$

Survivor Function

$$S(x) = 1/2 \, \frac{\pi - 2 \, \arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)}{\pi}$$

Hazard Function

$$h(x) = -2 \, \frac{\cosh(x)}{\sqrt{-\sinh(x) \left(-1 + \sinh(x)\right)} \left(-\pi + 2 \, \arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)\right)}$$

Mean

$$mu = \frac{1}{\pi} \int_{0}^{-\ln\left(\sqrt{2}-1\right)} \frac{\cosh(x)\, x}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\, \mathrm{d}x$$

Variance

$$sigma^2 = -\frac{1}{\pi^2} \left( \left( \left( \int_{0}^{-\ln\left(\sqrt{2}-1\right)} \frac{\cosh(x)\, x}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\, \mathrm{d}x \right)^2 - \int_{0}^{-\ln\left(\sqrt{2}-1\right)} \frac{\cosh(x)\, x^2}{\sqrt{\sinh(x)}\sqrt{1-\sinh}}\right.\right.$$

Moment Function

$$m(x) = \int_{0}^{-\ln\left(\sqrt{2}-1\right)} \frac{x^r \cosh(x)}{\sqrt{-\sinh(x)\left(-1+\sinh(x)\right)}\pi}\, \mathrm{d}x$$

Moment Generating Function

$$\frac{1}{\pi} \int_{0}^{-\ln\left(\sqrt{2}-1\right)} \frac{e^{tx} \cosh(x)}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\, \mathrm{d}x$$

1

---

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

Probability Distribution Function

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

---

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \frac{\arcsin\left(-3+2\operatorname{arctanh}\left(\frac{e^4-1}{e^4+1}\right)\right) - \arcsin\left(-3+2\operatorname{arctanh}(x^{-1})\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\left(\tanh\left(-3/2 + 1/2\,\sin\left(s\pi - \arcsin\left(-3 + 2\,\operatorname{arctanh}\left(\frac{e^4 - 1}{e^4 + 1}\right)\right)\right)\right)\right)^{-1}]$$

Survivor Function

$$S(x) = \frac{\pi - \arcsin\left(-3 + 2\,\operatorname{arctanh}\left(\frac{e^4-1}{e^4+1}\right)\right) + \arcsin\left(-3 + 2\,\operatorname{arctanh}\left(x^{-1}\right)\right)}{\pi}$$

Hazard Function

$$h(x) = -\frac{1}{\sqrt{-\left(-1 + \operatorname{arctanh}\left(x^{-1}\right)\right)\left(-2 + \operatorname{arctanh}\left(x^{-1}\right)\right)}\left(x^2 - 1\right)\left(-\pi + \arcsin\left(-3 + 2\,\operatorname{arctanh}\right.\right.}$$

Mean

$$mu = \frac{1}{\pi}\int_{\frac{e^4+1}{e^4-1}}^{\frac{e^2+1}{e^2-1}} \frac{x}{\sqrt{-\left(-1 + \operatorname{arctanh}\left(x^{-1}\right)\right)\left(-2 + \operatorname{arctanh}\left(x^{-1}\right)\right)}\left(x^2 - 1\right)}\,dx$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_{\frac{e^4+1}{e^4-1}}^{\frac{e^2+1}{e^2-1}} \frac{x^2}{\sqrt{-\left(-1 + \operatorname{arctanh}\left(x^{-1}\right)\right)\left(-2 + \operatorname{arctanh}\left(x^{-1}\right)\right)}\left(x^2 - 1\right)}\,dx\pi - \left(\int_{\frac{e^4+1}{e^4-1}}^{\frac{e^2+1}{e^2-1}} \frac{}{\sqrt{}}\right.\right.$$

Moment Function

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

Moment Generating Function

$$\frac{1}{\pi}\int_{\frac{e^4+1}{e^4-1}}^{\frac{e^2+1}{e^2-1}} \frac{e^{tx}}{\sqrt{-\left(-1 + \operatorname{arctanh}\left(x^{-1}\right)\right)\left(-2 + \operatorname{arctanh}\left(x^{-1}\right)\right)}\left(x^2 - 1\right)}\,dx_{\,1}$$

---

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

Probability Distribution Function

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

Cumulative Distribution Function

$$F(x) = \frac{1}{\pi}\int_{2\,\frac{e^2}{e^4-1}}^{x} \frac{1}{\sqrt{-\left(-1+\operatorname{arcsinh}\left(t^{-1}\right)\right)\left(-2+\operatorname{arcsinh}\left(t^{-1}\right)\right)}\sqrt{t^2+1}\,|t|}\,dt$$

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

$$S(x) = \frac{1}{\pi}\left(\pi - \int_{2\,\frac{e^2}{e^4-1}}^{x} \frac{1}{\sqrt{-\left(-1+\operatorname{arcsinh}\left(t^{-1}\right)\right)\left(-2+\operatorname{arcsinh}\left(t^{-1}\right)\right)}\sqrt{t^2+1}\,|t|}\,dt\right)$$

Hazard Function

$$h(x) = -\frac{1}{\sqrt{-\left(-1+\operatorname{arcsinh}\left(x^{-1}\right)\right)\left(-2+\operatorname{arcsinh}\left(x^{-1}\right)\right)}\sqrt{x^2+1}\,|x|}\left(-\pi + \int_{2\,\frac{e^2}{e^4-1}}^{x} \frac{}{\sqrt{-\left(-1+\operatorname{ar}\right.}}\right.$$

Mean

$$mu = \frac{1}{\pi}\int_{2\,\frac{e^2}{e^4-1}}^{2\,\frac{e}{e^2-1}} \frac{1}{\sqrt{-1+\operatorname{arcsinh}\left(x^{-1}\right)}\sqrt{2-\operatorname{arcsinh}\left(x^{-1}\right)}\sqrt{x^2+1}}\,dx$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_{2\,\frac{e^2}{e^4-1}}^{2\,\frac{e}{e^2-1}} \frac{x}{\sqrt{-1+\operatorname{arcsinh}\left(x^{-1}\right)}\sqrt{2-\operatorname{arcsinh}\left(x^{-1}\right)}\sqrt{x^2+1}}\,dx\pi - \left(\int_{2\,\frac{e^2}{e^4-1}}^{2\,\frac{e}{e^2-1}} \frac{}{\sqrt{-1+}}\right.\right.$$

Moment Function

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

Moment Generating Function

$$\frac{\frac{1}{\pi}\int_{2\,\frac{e^2}{e^4-1}}^{2\,\frac{e}{e^2-1}}\frac{e^{tx}}{\sqrt{-1+\operatorname{arcsinh}(x^{-1})}\sqrt{2-\operatorname{arcsinh}(x^{-1})}\sqrt{x^2+1}x}\,dx}{1}$$

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

Probability Distribution Function

$$f(x) = \frac{\cosh(x^{-1})}{\sqrt{-(\cosh(x^{-1}))^2+3\,\sinh(x^{-1})-1}\pi\,x^2}$$

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{1}{\pi}\left(\pi - 2\,\arcsin\left(e^{x^{-1}}-3-e^{-x^{-1}}\right)\right)$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\left(\ln(2)-\ln\left(\cos(s\pi)+3+\sqrt{(\cos(s\pi))^2+6\,\cos(s\pi)+13}\right)\right)^{-1}]$$

Survivor Function

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

Hazard Function

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

Mean

$$mu = \frac{1}{\pi}\int_{-\left(\ln\left(-2+\sqrt{5}\right)\right)^{-1}}^{\left(\ln\left(1+\sqrt{2}\right)\right)^{-1}}\frac{\cosh(x^{-1})}{x\sqrt{-(\cosh(x^{-1}))^2+3\,\sinh(x^{-1})-1}}\,dx$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_{-\left(\ln\left(-2+\sqrt{5}\right)\right)^{-1}}^{\left(\ln\left(1+\sqrt{2}\right)\right)^{-1}}\frac{\cosh(x^{-1})}{\sqrt{-(\cosh(x^{-1}))^2+3\,\sinh(x^{-1})-1}}\,dx\pi - \left(\int_{-\left(\ln\left(-2+\sqrt{5}\right)\right)^{-1}}^{\left(\ln\left(1+\sqrt{2}\right)\right)^{-1}}\frac{}{x\sqrt{}}\right.\right.$$

Moment Function

$$m(x) = \int_{-\left(\ln\left(-2+\sqrt{5}\right)\right)^{-1}}^{\left(\ln\left(1+\sqrt{2}\right)\right)^{-1}} \frac{x^r \cosh\left(x^{-1}\right)}{\sqrt{-\left(\cosh\left(x^{-1}\right)\right)^2 + 3\,\sinh\left(x^{-1}\right) - 1}\pi\, x^2}\,\mathrm{d}x$$

Moment Generating Function

$$\frac{\frac{1}{\pi}\int_{-\left(\ln\left(-2+\sqrt{5}\right)\right)^{-1}}^{\left(\ln\left(1+\sqrt{2}\right)\right)^{-1}} \frac{\mathrm{e}^{tx} \cosh\left(x^{-1}\right)}{\sqrt{-\left(\cosh\left(x^{-1}\right)\right)^2 + 3\,\sinh\left(x^{-1}\right) - 1}x^2}\,\mathrm{d}x \quad {}_{1}}{}$$

$$t \mapsto \left(\mathrm{csch}\left(t\right)\right)^{-1} + 1$$

Probability Distribution Function

$$f(x) = \frac{1}{\sqrt{-\mathrm{arccsch}\left(\left(x-1\right)^{-1}\right)\left(-1+\mathrm{arccsch}\left(\left(x-1\right)^{-1}\right)\right)}\sqrt{x^2-2\,x+2}\pi}$$

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} =$$

Survivor Function

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

Hazard Function

$$h(x) = \frac{1}{\sqrt{-\mathrm{arccsch}\left(\left(x-1\right)^{-1}\right)\left(-1+\mathrm{arccsch}\left(\left(x-1\right)^{-1}\right)\right)}\sqrt{x^2-2\,x+2}}\left(\pi - \int_1^x \frac{}{\sqrt{-\mathrm{arccsch}\,(}}\right.$$

Mean

$$mu = \frac{1}{\pi}\int_{1}^{-1/2\,\mathrm{e}^{-1}+1/2\,\mathrm{e}+1} \frac{x}{\sqrt{\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{1-\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{x^2-2\,x+2}}\,\mathrm{d}x$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_{1}^{-1/2\,\mathrm{e}^{-1}+1/2\,\mathrm{e}+1} \frac{x^2}{\sqrt{\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{1-\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{x^2-2\,x+2}}\,\mathrm{d}x\right.$$

Moment Function

$$m(x) = \int_{1}^{-1/2\,\mathrm{e}^{-1}+1/2\,\mathrm{e}+1} \frac{x^r}{\sqrt{-\operatorname{arccsch}\left((x-1)^{-1}\right)\left(-1+\operatorname{arccsch}\left((x-1)^{-1}\right)\right)}\sqrt{x^2-2\,x+2}\pi}\,\mathrm{d}x$$

Moment Generating Function

$$\frac{\frac{1}{\pi}\int_{1}^{-1/2\,\mathrm{e}^{-1}+1/2\,\mathrm{e}+1} \frac{\mathrm{e}^{tx}}{\sqrt{\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{1-\operatorname{arccsch}\left((x-1)^{-1}\right)}\sqrt{x^2-2\,x+2}}\,\mathrm{d}x_{\;1}}{t \mapsto \tanh\left(t^{-1}\right)}$$

Probability Distribution Function

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

Cumulative Distribution Function

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

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto \tanh\left(\left(\cos\left(1/2\,s\pi\right)\right)^{-2}\right)]$$

Survivor Function

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

Hazard Function

$$h(x) = -\frac{\sqrt{-1+\operatorname{arctanh}(x)}}{(\operatorname{arctanh}(x))^2 (x^2-1)} \frac{1}{\sqrt{\frac{-1+\operatorname{arctanh}(x)}{(\operatorname{arctanh}(x))^2}}} \left( -2\sqrt{\frac{-1+\operatorname{arctanh}(x)}{(\operatorname{arctanh}(x))^2}} \operatorname{arctanh}(x) \arctan\left(\sqrt{-}\right.\right.$$

Mean

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

Variance

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

Moment Function

$$m(x) = \int_{\frac{e-e^{-1}}{e+e^{-1}}}^{1} -\frac{x^r}{\pi\,(\operatorname{arctanh}(x))^2 (x^2-1)} \frac{1}{\sqrt{\frac{-1+\operatorname{arctanh}(x)}{(\operatorname{arctanh}(x))^2}}}\,dx$$

Moment Generating Function

$$-\frac{1}{\pi} \int_{\frac{e^2-1}{e^2+1}}^{1} \frac{e^{tx}}{\operatorname{arctanh}(x)\sqrt{-1+\operatorname{arctanh}(x)}\,(x^2-1)}\,dx$$ [1]

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

Probability Distribution Function

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

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

Probability Distribution Function

$$f(x) = \frac{\cosh(x)}{\pi \sqrt{-\sinh(x)\,(-1+\sinh(x))}}$$

Cumulative Distribution Function

$$F(x) = 1/2\,\frac{\pi + 2\,\arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)}{\pi}$$

Inverse Cumulative Distribution Function

$$F^{-1} = [s \mapsto -\ln(2) + \ln\left(-\cos(s\pi) + 1 + \sqrt{(\cos(s\pi))^2 - 2\,\cos(s\pi) + 5}\right)]$$

Survivor Function

$$S(x) = 1/2\,\frac{\pi - 2\,\arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)}{\pi}$$

Hazard Function

$$h(x) = 2\,\frac{\cosh(x)}{\sqrt{-\sinh(x)\,(-1+\sinh(x))}\,\left(\pi - 2\,\arcsin\left(\mathrm{e}^{x} - 1 - \mathrm{e}^{-x}\right)\right)}$$

Mean

$$mu = \frac{1}{\pi}\int_0^{\ln\left(1+\sqrt{2}\right)} \frac{x\cosh(x)}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\,\mathrm{d}x$$

Variance

$$sigma^2 = \frac{1}{\pi^2}\left(\int_0^{\ln\left(1+\sqrt{2}\right)} \frac{x^2\cosh(x)}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\,\mathrm{d}x\pi - \left(\int_0^{\ln\left(1+\sqrt{2}\right)} \frac{x\cosh(x)}{\sqrt{\sinh(x)}\sqrt{1-\sinh(x)}}\,\mathrm{d}\right.\right.$$

Moment Function

$$m(x) = \int_0^{\ln\left(1+\sqrt{2}\right)} \frac{x^r\cosh(x)}{\pi\sqrt{-\sinh(x)\,(-1+\sinh(x))}}\,\mathrm{d}x$$

Moment Generating Function

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

[1]