```
> restart;
  read("c:/appl/appl7.txt");
```

PROCEDURES:

AllPermutations(n), *AllCombinations(n, k)*, *Benford(X)*, *BootstrapRV(Data)*,
CDF:CHF:HF:IDF:PDF:SF(X, [x])), *CoefOfVar(X)*, *Convolution(X, Y)*,
ConvolutionIID(X, n), *CriticalPoint(X, prob)*, *Determinant(MATRIX)*, *Difference(X, Y)*,
Display(X), *ExpectedValue(X, [g])*, *KSTest(X, Data, Parameters)*, *Kurtosis(X)*,
Maximum(X, Y), *MaximumIID(X, n)*, *Mean(X)*, *MGF(X)*, *Minimum(X, Y)*,
MinimumIID(X, n), *Mixture(MixParameters, MixRVs)*,
MLE(X, Data, Parameters, [Rightcensor]), *MLENHPP(X, Data, Parameters, obstime)*,
MLEWeibull(Data, [Rightcensor]), *MOM(X, Data, Parameters)*,
NextCombination(Previous, size), *NextPermutation(Previous)*, *OrderStat(X, n, r, ["wo"])*,
PlotDist(X, [low], [high]), *PlotEmpCDF(Data, [low], [high])*,
PlotEmpCIF(Data, [low], [high]), *PlotEmpSF(Data, Censor)*,
PlotEmpVsFittedCDF(X, Data, Parameters, [low], [high]),
PlotEmpVsFittedCDF(X, Data, Parameters, [low], [high]),
PlotEmpVsFittedSF(X, Data, Parameters, Censor, low, high),
PPPlot(X, Data, Parameters), *Product(X, Y)*, *ProductIID(X, n)*,
QQPlot(X, Data, Parameters), *RangeStat(X, n, ["wo"])*, *Skewness(X)*, *Transform(X, g)*,
Truncate(X, low, high), *Variance(X)*, *VerifyPDF(X)*

Procedure Notation:
X and Y are random variables
Greek letters are numeric or symbolic parameters
x is numeric or symbolic
n and r are positive integers, n >= r
low and high are numeric
g is a function
Brackets [] denote optional parameters
"double quotes" denote character strings
MATRIX is a 2 x 2 array of random variables
A capitalized parameter indicates that it must be
entered as a list --> ex. Data := [1, 12.4, 34, 52.45, 63]

Variate Generation:

ArcTanVariate(alpha, phi), *BinomialVariate(n, p, m)*, *ExponentialVariate(lambda)*,
NormalVariate(mu, sigma), *UniformVariate()*, *WeibullVariate(lambda, kappa, m)*

DATA SETS:

BallBearing, *HorseKickFatalities*, *Hurricane*, *MP6*, *RatControl*, *RatTreatment*, *USSHalfBeak*

ArcSinRV(), *ArcTanRV(alpha, phi)*, *BetaRV(alpha, beta)*, *CauchyRV(a, alpha)*, *ChiRV(n)*, *ChiSquareRV(n), ErlangRV(lambda, n), ErrorRV(mu, alpha, d), ExponentialRV(lambda), ExponentialPowerRV(lambda, kappa), ExtremeValueRV(alpha, beta), FRV(n1, n2), GammaRV(lambda, kappa), GeneralizedParetoRV(gamma, delta, kappa), GompertzRV(delta, kappa), HyperbolicSecantRV(), HyperExponentialRV(p, l), HypoExponentialRV(l), IDBRV(gamma, delta, kappa), InverseGaussianRV(lambda, mu), InvertedGammaRV(alpha, beta), KSRV(n), LaPlaceRV(omega, theta), LogGammaRV(alpha, beta), LogisticRV(kappa, lambda), LogLogisticRV(lambda, kappa), LogNormalRV(mu, sigma), LomaxRV(kappa, lambda), MakehamRV(gamma, delta, kappa), MuthRV(kappa), NormalRV(mu, sigma), ParetoRV(lambda, kappa), RayleighRV(lambda), StandardCauchyRV(), StandardNormalRV(), StandardTriangularRV(m), StandardUniformRV(), TRV(n), TriangularRV(a, m, b), UniformRV(a, b), WeibullRV(lambda, kappa)*

```
Error, attempting to assign to `DataSets` which is protected.
Try declaring `local DataSets`; see ?protect for details.
```

```
> bf := LomaxRV(1, 2);
  bfname := "LomaxRV(1, 2)";
```

$$bf := \left[\left[x \rightarrow \frac{2}{(1+2\,x)^2}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

$$bfname := \text{"LomaxRV(1, 2)"} \quad (1)$$

```
> #plot(1/csch(t)+1, t = 0..0.0010);
  #plot(diff(1/csch(t),t), t=0..0.0010);
  #limit(1/csch(t), t=0);
> solve(exp(-t) = y, t);
```

$$-\ln(y) \quad (2)$$

```
> # discarded  -ln(t + 1),  t-> csch(t),t->arccsch(t),t -> tan(t),
> #name of the file for latex output
  filename := "C:/Latex_Output_2/Lomax.tex";


  glist := [t -> t^2 , t -> sqrt(t),  t -> 1/t,  t -> arctan(t),  t
  -> exp(t), t -> ln(t), t -> exp(-t), t -> -ln(t),  t -> ln(t+1),
  t -> 1/(ln(t+2)), t -> tanh(t), t -> sinh(t), t -> arcsinh(t),
  t-> csch(t+1),t->arccsch(t+1), t-> 1/tanh(t+1), t->  1/sinh(t+1),
   t->  1/arcsinh(t+1), t->  1/csch(t)+1, t-> tanh(1/t), t->csch
  (1/t), t-> arccsch(1/t), t-> arctanh(1/t)  ]:

  base := t -> PDF(bf, t):

  print(base(x)):

  #begin latex file formatting
  appendto(filename);
    printf("\\documentclass[12pt]{article} \n");
    printf("\\usepackage{amsfonts} \n");
    printf("\\begin{document} \n");
```

```
  print(bfname);
  printf("$$");
  latex(bf[1]);
  printf("$$");
writeto(terminal);

#begin loopint through transformations
for i from 1 to 22 do
#for i from 1 to 3 do
   print( "i is", i, "  -----------------------------------------
-------------------------------------------------------------------
-------------");

   g := glist[i]:
   l := bf[2][1];
   u := bf[2][2];
   Temp := Transform(bf, [[unapply(g(x), x)],[l,u]]);

  #terminal output
  print( "l and u", l, u );
  print("g(x)", g(x), "base", base(x),bfname);
  print("f(x)", PDF(Temp, x));
  print("F(x)", CDF(Temp, x));
  if i=14 then print("IDF did not work") elif i=19 then print
("IDF did not work") elif i=21 then print("IDF did not work")
else print("IDF(x)", IDF(Temp)) end if;
  print("S(x)", SF(Temp, x));
  print("h(x)", HF(Temp, x));
  print("mean and variance", Mean(Temp), Variance(Temp));
  assume(r > 0); mf := int(x^r*PDF(Temp, x), x = Temp[2][1] ..
Temp[2][2]):
  print("MF", mf);
  print("MGF", MGF(Temp));
  #PlotDist(PDF(Temp), 0, 40);
  #PlotDist(HF(Temp), 0, 40);
  latex(PDF(Temp,x));
  #print("transforming with", [[x->g(x)],[0,infinity]]);
  #X2 := Transform(bf, [[x->g(x)],[0,infinity]]);
  #print("pdf of X2 = ", PDF(X2,x));
  #print("pdf of Temp = ", PDF(Temp,x));


  #latex output
  appendto(filename);
  printf("-----------------------------------------------------------
------------------------------------  \\\\");
  printf("$$");
  latex(glist[i]);
  printf("$$");
  printf("Probability Distribution Function \n$$  f(x)=");
  latex(PDF(Temp,x));
  printf("$$");
  printf("Cumulative Distribution Function  \n $$F(x)=");
  latex(CDF(Temp,x));
  printf("$$");
  printf(" Inverse Cumulative Distribution Function \n ");
  printf(" $$F^{-1} = ");
```

```
  if i=14 then print("Unable to find IDF") elif i=19 then print
 ("Unable to find IDF") elif i=21 then print("Unable to find IDF")
else latex(IDF(Temp)[1]) end if;
  printf("$$");
  printf("Survivor Function \n $$ S(x)=");
  latex(SF(Temp, x));
  printf("$$ Hazard Function \n $$ h(x)=");
  latex(HF(Temp,x));
  printf("$$");
  printf("Mean \n $$ \mu=");
  latex(Mean(Temp));
  printf("$$ Variance \n $$ \sigma^2 = ");
  latex(Variance(Temp));
  printf("$$");
  printf("Moment Function \n $$ m(x) = ");
  latex(mf);
  printf("$$ Moment Generating Function \n $$");
  latex(MGF(Temp)[1]);
  printf("$$");
  #latex(MGF(Temp)[1]);

  writeto(terminal);


od;

#final latex output
appendto(filename);
printf("\\end{document}\n");
writeto(terminal);
```

$$filename := \text{"C:/Latex\_Output\_2/Lomax.tex"}$$

$$\frac{2}{(1+2x)^2}$$

"i is", 1,
 " ---
 ----------"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, x^2, \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{1}{\left(1+2\sqrt{x}\right)^2 \sqrt{x}}$$

$$\text{"F(x)"}, \frac{2\sqrt{x}}{1+2\sqrt{x}}$$

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

$$\text{"S(x)"}, \frac{1}{1+2\sqrt{x}}$$

$$\text{"h(x)"}, \frac{1}{\left(1+2\sqrt{x}\right)\sqrt{x}}$$

$$\text{"mean and variance"}, \infty, \mathit{undefined}$$

$$mf := 2^{1-2r\sim}\,\pi\, r\sim \csc(2\,\pi\, r\sim)$$

$$\text{"MF"}, 2^{1-2r\sim}\,\pi\, r\sim \csc(2\,\pi\, r\sim)$$

$$\text{"MGF"}, \frac{2\,\mathrm{MeijerG}\left(\left[\left[\frac{1}{2}, 1\right], [\ ]\right], \left[\left[\frac{3}{2}, 1, \frac{1}{2}\right], [\ ]\right], -\frac{1}{4}\,t\right)}{\sqrt{-t}\,\pi}$$

```
{\frac {1}{ \left( 1+2\,\sqrt {x} \right) ^{2}\sqrt {x}}}
```

"i is", 2,

" ---"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \sqrt{x}, \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{4\,x}{\left(2\,x^2+1\right)^2}$$

$$\text{"F(x)"}, \frac{2\,x^2}{2\,x^2+1}$$

ERROR(IDF): Could not find the appropriate inverse

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

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

$$\text{"h(x)"}, \frac{4\,x}{2\,x^2+1}$$

$$\text{"mean and variance"}, \frac{1}{4}\,\pi\sqrt{2}, \infty$$

$$mf := 2^{-1 - \frac{1}{2} r\sim} \pi\, r\sim \csc\left(\frac{1}{2} \pi\, r\sim\right)$$

$$\text{"MF"}, 2^{-1 - \frac{1}{2} r\sim} \pi\, r\sim \csc\left(\frac{1}{2} \pi\, r\sim\right)$$

$$\text{"MGF"}, \lim_{x \to \infty} \frac{1}{4} \frac{1}{2 x^2 + 1} \Bigg(2 \mathrm{I} \sqrt{2}\, \mathrm{Ei}\left(1, -t x + \frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2 - 2 \mathrm{I} \sqrt{2}\, \mathrm{Ei}\left(1, -t x - \frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) e^{-\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2 - 2 \mathrm{I} \sqrt{2}\, \mathrm{Ei}\left(1, -\frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2 + 2 \mathrm{I} \sqrt{2}\, \mathrm{Ei}\left(1, -\frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) e^{-\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2 - 2 \sqrt{2}\, \pi\, \mathrm{csgn}(t)\, e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2$$
$$+ 4 \sqrt{2}\, \mathrm{Si}\left(\frac{1}{2} \sqrt{2}\, t\right) e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t x^2 + \mathrm{I} t \sqrt{2}\, e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} \mathrm{Ei}\left(1, -t x + \frac{1}{2} \mathrm{I} \sqrt{2}\, t\right)$$
$$- \mathrm{I} t \sqrt{2}\, e^{-\frac{1}{2} \mathrm{I} \sqrt{2}\, t} \mathrm{Ei}\left(1, -t x - \frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) - \mathrm{I} \sqrt{2}\, \mathrm{Ei}\left(1, -\frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t$$
$$+ \mathrm{I} \sqrt{2}\, t\, e^{-\frac{1}{2} \mathrm{I} \sqrt{2}\, t} \mathrm{Ei}\left(1, -\frac{1}{2} \mathrm{I} \sqrt{2}\, t\right) - \sqrt{2}\, \pi\, \mathrm{csgn}(t)\, e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t$$
$$+ 2 \sqrt{2}\, \mathrm{Si}\left(\frac{1}{2} \sqrt{2}\, t\right) e^{\frac{1}{2} \mathrm{I} \sqrt{2}\, t} t + 8 x^2 - 4 e^{t x} + 4 \Bigg)$$

```
4\,{\frac {x}{ \left( 2\,{x}^{2}+1 \right) ^{2}}}
```

"i is", 3,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \frac{1}{x}, \text{"base"}, \frac{2}{(1 + 2 x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{2}{(x + 2)^2}$$

$$\text{"F(x)"}, \frac{x}{x + 2}$$

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

$$\text{"S(x)"}, \frac{2}{x+2}$$

$$\text{"h(x)"}, \frac{1}{x+2}$$

$$\text{"mean and variance"}, \infty, \mathit{undefined}$$

$$mf := 2^{r\sim} \pi \csc(\pi r\sim)\, r\sim$$

$$\text{"MF"}, 2^{r\sim} \pi \csc(\pi r\sim)\, r\sim$$

$$\text{"MGF"}, \lim_{x \to \infty} \left(-\frac{1}{x+2} \left(2\,\mathrm{Ei}(1, -t\,x - 2\,t)\, t\,x\,\mathrm{e}^{-2\,t} - 2\,\mathrm{Ei}(1, -2\,t)\, t\,x\,\mathrm{e}^{-2\,t} + 4\,\mathrm{Ei}(1, -t\,x - 2\,t)\, t\,\mathrm{e}^{-2\,t} - 4\,\mathrm{e}^{-2\,t}\,\mathrm{Ei}(1, -2\,t)\, t + 2\,\mathrm{e}^{t\,x} - x - 2\right) \right)$$

```
2\, \left( x+2 \right) ^{-2}
```

"i is", 4,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \arctan(x), \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{2\,(1+\tan(x)^2)}{(1+2\tan(x))^2}$$

$$\text{"F(x)"}, \frac{2\sin(x)}{\cos(x) + 2\sin(x)}$$

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

$$\text{"S(x)"}, \frac{\cos(x)}{\cos(x) + 2\sin(x)}$$

$$\text{"h(x)"}, \frac{2}{\cos(x)\,(\cos(x) + 2\sin(x))}$$

$$\text{"mean and variance"}, \frac{1}{10}\pi + \frac{2}{5}\ln(2), \frac{2}{5}\,\mathrm{I}\,\mathrm{dilog}\left(\frac{2}{5} - \frac{4}{5}\,\mathrm{I}\right) - \frac{2}{5}\,\mathrm{I}\,\mathrm{dilog}\left(\frac{8}{5} + \frac{4}{5}\,\mathrm{I}\right) - \frac{1}{10}\,\mathrm{I}\,\pi^2 + \frac{2}{5}\,\mathrm{I}\,\pi \arctan\left(\frac{1}{2}\right) + \frac{18}{25}\pi\ln(2) - \frac{1}{5}\pi\ln(5) + \frac{1}{25}\pi^2 - \frac{4}{25}\ln(2)^2$$

$$mf := \int_0^{\frac{1}{2}\pi} \frac{2\,x^{r\sim}\,(1+\tan(x)^2)}{(1+2\tan(x))^2}\,\mathrm{d}x$$

$$\text{"MF"}, \int_{0}^{\frac{1}{2}\pi} \frac{2\, x^{r\sim} \left(1 + \tan(x)^2\right)}{\left(1 + 2\tan(x)\right)^2}\, dx$$

$$\text{"MGF"}, 2\left(\int_{0}^{\frac{1}{2}\pi} \frac{e^{t x}}{-3\cos(x)^2 + 4\sin(x)\cos(x) + 4}\, dx\right)$$

```
2\,{\frac {1+ \left( \tan \left( x \right)  \right) ^{2}}{ \left
( 1+2
\,\tan \left( x \right)  \right) ^{2}}}
```

"i is", 5,

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

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, e^{x}, \text{"base"}, \frac{2}{(1 + 2x)^2}, \text{"LomaxRV(1, 2)"}$$

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

$$\text{"F(x)"}, \frac{2\ln(x)}{1 + 2\ln(x)}$$

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

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

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

$$\text{"mean and variance"}, \infty, \textit{undefined}$$

$$mf := \infty$$

$$\text{"MF"}, \infty$$

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

```
2\,{\frac {1}{ \left( 1+2\,\ln  \left( x \right)  \right) ^{2}x}
}
```

"i is", 6,

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

$$g := t \to \ln(t)$$
$$l := 0$$
$$u := \infty$$
$$Temp := \left[\left[y\sim \to \frac{2\, \mathrm{e}^{y\sim}}{\left(1+2\, \mathrm{e}^{y\sim}\right)^2}\right], [-\infty, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$
$$\text{"l and u"}, 0, \infty$$
$$\text{"g(x)"}, \ln(x), \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$
$$\text{"f(x)"}, \frac{2\, \mathrm{e}^{x}}{\left(1+2\, \mathrm{e}^{x}\right)^2}$$
$$\text{"F(x)"}, \frac{2\, \mathrm{e}^{x}}{1+2\, \mathrm{e}^{x}}$$
$$\text{"IDF(x)"}, \left[\left[s \to -\ln(2) + \ln\left(-\frac{s}{s-1}\right)\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\right]$$
$$\text{"S(x)"}, \frac{1}{1+2\, \mathrm{e}^{x}}$$
$$\text{"h(x)"}, \frac{2\, \mathrm{e}^{x}}{1+2\, \mathrm{e}^{x}}$$
$$\text{"mean and variance"}, -\ln(2), \frac{1}{3}\pi^2$$
$$mf := \int_{-\infty}^{\infty} \frac{2\, x^{r\sim}\, \mathrm{e}^{x}}{\left(1+2\, \mathrm{e}^{x}\right)^2}\, \mathrm{d}x$$
$$\text{"MF"}, \int_{-\infty}^{\infty} \frac{2\, x^{r\sim}\, \mathrm{e}^{x}}{\left(1+2\, \mathrm{e}^{x}\right)^2}\, \mathrm{d}x$$
$$\text{"MGF"}, \int_{-\infty}^{\infty} \frac{2\, \mathrm{e}^{x\,(t+1)}}{\left(1+2\, \mathrm{e}^{x}\right)^2}\, \mathrm{d}x$$

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

"i is", 7,

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

$$g := t \to \mathrm{e}^{-t}$$
$$l := 0$$
$$u := \infty$$
$$Temp := \left[\left[y\sim \to \frac{2}{\left(-1+2\ln(y\sim)\right)^2 y\sim}\right], [0, 1], [\text{"Continuous"}, \text{"PDF"}]\right]$$
$$\text{"l and u"}, 0, \infty$$

$$"g(x)", e^{-x}, "base", \frac{2}{(1+2x)^2}, "LomaxRV(1, 2)"$$

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

$$"F(x)", \begin{cases} -\frac{1}{-1+2\ln(x)} & x \le e^{\frac{1}{2}} \\ \infty & e^{\frac{1}{2}} < x \end{cases}$$

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

$$"S(x)", \begin{cases} \frac{2\ln(x)}{-1+2\ln(x)} & x \le e^{\frac{1}{2}} \\ -\infty & e^{\frac{1}{2}} < x \end{cases}$$

$$"h(x)", \begin{cases} \frac{1}{(-1+2\ln(x))\,x\ln(x)} & x \le e^{\frac{1}{2}} \\ 0 & e^{\frac{1}{2}} < x \end{cases}$$

$$"mean and variance", -\frac{1}{2}\,e^{\frac{1}{2}}\,\mathrm{Ei}\left(1, \frac{1}{2}\right)+1, -e\,\mathrm{Ei}(1, 1)-\frac{1}{4}\,e\,\mathrm{Ei}\left(1, \frac{1}{2}\right)^2+e^{\frac{1}{2}}\,\mathrm{Ei}\left(1, \frac{1}{2}\right)$$

$$mf := -\frac{1}{2}\,r\sim e^{\frac{1}{2}\,r\sim}\,\mathrm{Ei}\left(1, \frac{1}{2}\,r\sim\right)+1$$

$$"MF", -\frac{1}{2}\,r\sim e^{\frac{1}{2}\,r\sim}\,\mathrm{Ei}\left(1, \frac{1}{2}\,r\sim\right)+1$$

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

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

"i is", 8,

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

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

$$l := 0$$

$$u := \infty$$

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

$$"l and u", 0, \infty$$

$$"g(x)", -\ln(x), "base", \frac{2}{(1+2x)^2}, "LomaxRV(1, 2)"$$

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

$$"F(x)", \frac{e^x}{e^x+2}$$

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

$$"S(x)", \frac{2}{e^x+2}$$

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

$$"mean and variance", \ln(2), \frac{1}{3}\pi^2$$

$$mf := \int_{-\infty}^{\infty} \frac{2\,x^{r\sim}\,e^x}{(e^x+2)^2}\,dx$$

$$"MF", \int_{-\infty}^{\infty} \frac{2\,x^{r\sim}\,e^x}{(e^x+2)^2}\,dx$$

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

```
2\,{\frac {{{\rm e}^{x}}}{ \left( {{\rm e}^{x}}+2 \right) ^{2}}}
```

"i is", 9,

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

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

$$l := 0$$

$$u := \infty$$

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

$$"l and u", 0, \infty$$

$$"g(x)", \ln(x+1), "base", \frac{2}{(1+2x)^2}, "LomaxRV(1, 2)"$$

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

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

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

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

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

$$\text{"mean and variance"}, \ln(2), \frac{1}{6}\pi^2 - 2\ln(2)^2$$

$$mf := \int_0^{\infty} \frac{2\,x^{r\sim}\,\mathrm{e}^{x}}{\left(-1 + 2\,\mathrm{e}^{x}\right)^2}\,\mathrm{d}x$$

$$\text{"MF"}, \int_0^{\infty} \frac{2\,x^{r\sim}\,\mathrm{e}^{x}}{\left(-1 + 2\,\mathrm{e}^{x}\right)^2}\,\mathrm{d}x$$

$$\text{"MGF"}, \int_0^{\infty} \frac{2\,\mathrm{e}^{x(t+1)}}{\left(-1 + 2\,\mathrm{e}^{x}\right)^2}\,\mathrm{d}x$$

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

"i is", 10,

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

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \frac{1}{\ln(x+2)}, \text{"base"}, \frac{2}{(1 + 2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

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

$$"F(x)", \begin{cases} \dfrac{1}{-3+2\,e^{\frac{1}{x}}} & x \le -\dfrac{1}{-\ln(3)+\ln(2)} \\ \infty & -\dfrac{1}{-\ln(3)+\ln(2)} < x \end{cases}$$

"IDF(x)", [[ ], [0, 1], ["Continuous", "IDF"]]

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

$$"h(x)", \begin{cases} \dfrac{e^{\frac{1}{x}}}{\left(-3+2\,e^{\frac{1}{x}}\right)x^2\left(-2+e^{\frac{1}{x}}\right)} & x \le -\dfrac{1}{-\ln(3)+\ln(2)} \\ 0 & -\dfrac{1}{-\ln(3)+\ln(2)} < x \end{cases}$$

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

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

$$mf := \int_0^{\frac{1}{\ln(2)}} \frac{2\,x^{r\sim}\,e^{\frac{1}{x}}}{\left(-3+2\,e^{\frac{1}{x}}\right)^2 x^2}\,dx$$

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

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

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

"i is", 11,

" ---"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \tanh(x), \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, -\frac{2}{(1+2\operatorname{arctanh}(x))^2 (x^2-1)}$$

$$\text{"F(x)"}, \frac{2\operatorname{arctanh}(x)}{1+2\operatorname{arctanh}(x)}$$

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

$$\text{"S(x)"}, \frac{1}{1+2\operatorname{arctanh}(x)}$$

$$\text{"h(x)"}, -\frac{2}{(1+2\operatorname{arctanh}(x))(x^2-1)}$$

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

$$mf := \int_0^1 \left(-\frac{2 x^{r\sim}}{(1+2\operatorname{arctanh}(x))^2 (x^2-1)}\right) dx$$

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

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

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

"i is", 12,

" --"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \sinh(x), \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{2}{(1+2\operatorname{arcsinh}(x))^2 \sqrt{x^2+1}}$$

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

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

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

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

$$\text{"mean and variance"}, \infty, \mathit{undefined}$$

$$mf := \infty$$

$$\text{"MF"}, \infty$$

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

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

"i is", 13,

" --"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{2\cosh(y\sim)}{4\cosh(y\sim)^2 + 4\sinh(y\sim) - 3}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

"g(x)", $\operatorname{arcsinh}(x)$, "base", $\frac{2}{(1+2x)^2}$, "LomaxRV(1, 2)"

"f(x)", $\frac{2\cosh(x)}{4\cosh(x)^2 + 4\sinh(x) - 3}$

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

ERROR(IDF): Could not find the appropriate inverse

"IDF(x)", $\left[\left[s \rightarrow -\ln(2) + \ln\left(-\frac{s + \sqrt{5s^2 - 8s + 4}}{s - 1}\right)\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\right]$

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

"h(x)", $-\frac{2\cosh(x)\left(-e^{x} - 1 + e^{-x}\right)}{4\cosh(x)^2 + 4\sinh(x) - 3}$

"mean and variance", $\frac{1}{5}\left(\ln(2) - \ln\left(7 - 3\sqrt{5}\right)\right)\sqrt{5}$, $\frac{2}{15}\sqrt{5}\,\pi^2 + \frac{2}{5}\sqrt{5}\ln(2)^2 - \frac{4}{5}\sqrt{5}\ln\left(\sqrt{5}-1\right)\ln(2) + \frac{1}{5}\sqrt{5}\ln\left(\sqrt{5}-1\right)^2 + \frac{2}{5}\sqrt{5}\ln\left(\sqrt{5}-1\right)\ln\left(\sqrt{5}+1\right) - \frac{1}{5}\sqrt{5}\ln\left(\sqrt{5}+1\right)^2 + \frac{2}{5}\sqrt{5}\operatorname{dilog}\left(\frac{1}{2} + \frac{1}{2}\sqrt{5}\right) + \frac{2}{5}\sqrt{5}\operatorname{dilog}\left(\frac{\sqrt{5}+3}{\sqrt{5}+1}\right) - \frac{1}{5}\ln(2)^2 + \frac{2}{5}\ln(2)\ln\left(7 - 3\sqrt{5}\right) - \frac{1}{5}\ln\left(7 - 3\sqrt{5}\right)^2$

$$mf := \int_0^\infty \frac{2x^{r\sim}\cosh(x)}{4\cosh(x)^2 + 4\sinh(x) - 3}\,dx$$

"MF", $\int_0^\infty \frac{2x^{r\sim}\cosh(x)}{4\cosh(x)^2 + 4\sinh(x) - 3}\,dx$

"MGF", $\int_0^\infty \frac{2e^{tx}\cosh(x)}{4\cosh(x)^2 + 4\sinh(x) - 3}\,dx$

```
2\,{\frac {\cosh \left( x \right) }{4\, \left( \cosh \left( x
\right)
 \right) ^{2}+4\,\sinh \left( x \right) -3}}
```

"i is", 14,

" --

----------"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \operatorname{csch}(x+1), \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

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

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

$$\text{"IDF did not work"}$$

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

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

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

$$mf := \int_0^{-\frac{2}{-e+e^{-1}}} \frac{2\, x^{r\sim}}{\sqrt{x^2+1}\, \left(-1+2\,\mathrm{arccsch}(x)\right)^2 |x|}\, dx$$

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

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

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

"i is", 15,

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

$$g := t \rightarrow \mathrm{arccsch}(t+1)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow -\frac{2\cosh(y\sim)}{-\cosh(y\sim)^2 + 4\sinh(y\sim) - 3} \right], \left[0, \ln\left(1+\sqrt{2}\right)\right], [\text{"Continuous"}, \text{"PDF"}] \right]$$

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

$$\text{"g(x)"}, \mathrm{arccsch}(x+1), \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, -\frac{2\cosh(x)}{-\cosh(x)^2 + 4\sinh(x) - 3}$$

$$\text{"F(x)"}, \begin{cases} -\dfrac{e^{2\,x}-1}{e^{2\,x}-4\,e^x-1} & x \le 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) \\ \mathit{undefined} & 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) < x \end{cases}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous"}, \text{"IDF"}]]$$

$$\text{"S(x)"}, \begin{cases} \dfrac{2\,(e^{2\,x}-2\,e^x-1)}{e^{2\,x}-4\,e^x-1} & x \le 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) \\ \mathit{undefined} & 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) < x \end{cases}$$

$$"h(x)", \begin{cases} \frac{\cosh(x)\,(e^{2x}-4\,e^{x}-1)}{(\cosh(x)^2-4\sinh(x)+3)\,(e^{2x}-2\,e^{x}-1)} & x \le 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) \\ \mathit{undefined} & 2\,\mathrm{arctanh}\left(\frac{1}{2}\sqrt{5}-\frac{1}{2}\right) < x \end{cases}$$

$$"mean and variance", \frac{2}{5}\sqrt{5}\ln(2)-\frac{2}{5}\sqrt{5}\ln(-3+5\sqrt{2}+3\sqrt{5}-\sqrt{2}\sqrt{5})+2\ln(1+\sqrt{2}), -\frac{4}{5}\sqrt{5}\,\mathrm{dilog}\left(\frac{\sqrt{5}+1}{2+\sqrt{5}}\right)+\frac{4}{5}\sqrt{5}\,\mathrm{dilog}\left(\frac{\sqrt{5}-1}{\sqrt{5}-2}\right)+\frac{4}{5}\sqrt{5}\ln(1+\sqrt{2})\ln(3-\sqrt{2}\sqrt{5}-\sqrt{5}+2\sqrt{2})-\frac{4}{5}\sqrt{5}\ln(1+\sqrt{2})\ln(3+\sqrt{2}\sqrt{5}+\sqrt{5}+2\sqrt{2})+\frac{4}{5}\sqrt{5}\,\mathrm{dilog}\left(-\frac{\sqrt{2}-\sqrt{5}-1}{2+\sqrt{5}}\right)-\frac{4}{5}\sqrt{5}\,\mathrm{dilog}\left(\frac{\sqrt{2}+\sqrt{5}-1}{\sqrt{5}-2}\right)-2\ln(1+\sqrt{2})^2-\frac{4}{5}\ln(2)^2+\frac{8}{5}\ln(2)\ln(-3+5\sqrt{2}+3\sqrt{5}-\sqrt{2}\sqrt{5})-\frac{8}{5}\sqrt{5}\ln(2)\ln(1+\sqrt{2})-\frac{4}{5}\ln(-3+5\sqrt{2}+3\sqrt{5}-\sqrt{2}\sqrt{5})^2+\frac{8}{5}\sqrt{5}\ln(-3+5\sqrt{2}+3\sqrt{5}-\sqrt{2}\sqrt{5})\ln(1+\sqrt{2})$$

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

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

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

```
-2\,{\frac {\cosh \left( x \right) }{- \left( \cosh \left( x
\right)
 \right) ^{2}+4\,\sinh \left( x \right) -3}}
```

"i is", 16,

" --"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{2}{\left(-1+2\,\mathrm{arctanh}\left(\frac{1}{y\sim}\right)\right)^2(y\sim^2-1)}\right], \left[1, \frac{-e-e^{-1}}{-e+e^{-1}}\right], ["Continuous",\right.$$

$$"PDF"]$$

$$"l and u", 0, \infty$$

$$"g(x)", \frac{1}{\tanh(x+1)}, "base", \frac{2}{(1+2x)^2}, "LomaxRV(1, 2)"$$

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

$$"F(x)", \begin{cases} \frac{1}{-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)} & x \le \frac{1}{\tanh\left(\frac{1}{2}\right)} \\ \infty + \mathrm{I}\,\Im\left(\frac{1}{-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)}\right) & \frac{1}{\tanh\left(\frac{1}{2}\right)} < x \end{cases}$$

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

$$"S(x)", \begin{cases} 1 - \frac{1}{-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)} & x \le \frac{1}{\tanh\left(\frac{1}{2}\right)} \\ -\infty - \mathrm{I}\,\Im\left(\frac{1}{-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)}\right) & \frac{1}{\tanh\left(\frac{1}{2}\right)} < x \end{cases}$$

$$"h(x)", \begin{cases} \frac{1}{\left(-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)\right)(x^2-1)\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)} & x \le \frac{1}{\tanh\left(\frac{1}{2}\right)} \\ 0 & \frac{1}{\tanh\left(\frac{1}{2}\right)} < x \end{cases}$$

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

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

$$mf := \int_{1}^{\frac{-e-e^{-1}}{-e+e^{-1}}} \frac{2\, x^{r\sim}}{\left(-1+2\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2 (x^2-1)}\, dx$$

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

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

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

"i is", 17,

" --

----------"

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \frac{1}{\sinh(x+1)}, \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

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

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

$$\text{"IDF(x)"},\ [[s\to 0],[0,1],[\text{"Continuous"},\text{"IDF"}]]$$

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

$$\text{"h(x)"},\ \frac{-1+2\ln\left(\sqrt{x^2+1}+1\right)-2\ln(x)}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2|x|\left(-1+\ln\left(\sqrt{x^2+1}+1\right)-\ln(x)\right)}$$

$$\text{"mean and variance"},\ 2\left(\int_0^{\frac{2\,\mathrm{e}}{\mathrm{e}^2-1}}\frac{1}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2}\,\mathrm{d}x\right),\ 2\left(\int_0^{\frac{2\,\mathrm{e}}{\mathrm{e}^2-1}}\frac{x}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2}\,\mathrm{d}x\right)$$

$$-4\left(\int_0^{\frac{2\,\mathrm{e}}{\mathrm{e}^2-1}}\frac{1}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2}\,\mathrm{d}x\right)^2$$

$$mf := \int_0^{\frac{2}{\mathrm{e}-\mathrm{e}^{-1}}}\frac{2\,x^{r\sim}}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2|x|}\,\mathrm{d}x$$

$$\text{"MF"},\ \int_0^{\frac{2}{\mathrm{e}-\mathrm{e}^{-1}}}\frac{2\,x^{r\sim}}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2|x|}\,\mathrm{d}x$$

$$\text{"MGF"},\ 2\left(\int_0^{\frac{2\,\mathrm{e}}{\mathrm{e}^2-1}}\frac{\mathrm{e}^{t\,x}}{\sqrt{x^2+1}\left(-1+2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2x}\,\mathrm{d}x\right)$$

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

"i is", 18,
" ---
----------"

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow -\frac{2\cosh\left(\frac{1}{y\sim}\right)}{y\sim^2 \left(-4\cosh\left(\frac{1}{y\sim}\right)^2 + 4\sinh\left(\frac{1}{y\sim}\right) + 3\right)} \right], \left[0, \frac{1}{\ln\left(1+\sqrt{2}\right)}\right], \right.$$

$$\left. [\text{"Continuous", "PDF"}] \right]$$

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

$$\text{"g(x)"}, \frac{1}{\operatorname{arcsinh}(x+1)}, \text{"base"}, \frac{2}{(1+2x)^2}, \text{"LomaxRV(1, 2)"}$$

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

$$\text{"F(x)"}, \begin{cases} -\dfrac{e^{\frac{1}{x}}}{-e^{\frac{2}{x}} + e^{\frac{1}{x}} + 1} & x \le \dfrac{1}{2\operatorname{arctanh}\left(\sqrt{5}-2\right)} \\ \mathit{undefined} & \dfrac{1}{2\operatorname{arctanh}\left(\sqrt{5}-2\right)} < x \end{cases}$$

$$\text{"IDF(x)"}, [[\ ], [0, 1], [\text{"Continuous", "IDF"}]]$$

$$\text{"S(x)"}, \begin{cases} \dfrac{e^{\frac{2}{x}} - 2e^{\frac{1}{x}} - 1}{e^{\frac{2}{x}} - e^{\frac{1}{x}} - 1} & x \le \dfrac{1}{2\operatorname{arctanh}\left(\sqrt{5}-2\right)} \\ \mathit{undefined} & \dfrac{1}{2\operatorname{arctanh}\left(\sqrt{5}-2\right)} < x \end{cases}$$

"h(x)",

$$\begin{cases} \dfrac{2\cosh\left(\frac{1}{x}\right)\left(-e^{\frac{2}{x}}+e^{\frac{1}{x}}+1\right)}{x^2\left(4\cosh\left(\frac{1}{x}\right)^2-4\sinh\left(\frac{1}{x}\right)-3\right)\left(-e^{\frac{2}{x}}+2\,e^{\frac{1}{x}}+1\right)} & x \le \dfrac{1}{2\,\operatorname{arctanh}\left(\sqrt{5}-2\right)} \\ \mathit{undefined} & \dfrac{1}{2\,\operatorname{arctanh}\left(\sqrt{5}-2\right)} < x \end{cases}$$

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

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

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

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

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

```
-2\,{\frac {\cosh \left( {x}^{-1} \right) }{{x}^{2} \left( -4\,
 \left( \cosh \left( {x}^{-1} \right)  \right) ^{2}+4\,\sinh
\left( {x
}^{-1} \right) +3 \right) }}
```

"i is", 19,

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

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \frac{1}{\operatorname{csch}(x)}+1, \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

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

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

$$\text{"IDF did not work"}$$

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

$$\text{"h(x)"}, -2 \Big/ \left(\sqrt{x^2-2\,x+2}\,\left(1+2\,\operatorname{arccsch}\left(\frac{1}{x-1}\right)\right)^2\left(-1+2\left(\right.\right.\right.$$

$$\int_{1}^{x} \frac{1}{\sqrt{t^2-2t+2}\,\left(1+2\,\mathrm{arccsch}\left(\frac{1}{t-1}\right)\right)^2}\,\mathrm{d}t\Bigg)\Bigg)\Bigg)$$

$$\text{"mean and variance"},\ \infty,\ \mathit{undefined}$$

$$\mathit{mf} := \infty$$

$$\text{"MF"},\ \infty$$

$$\text{"MGF"},\ \int_{1}^{\infty} \frac{2\,\mathrm{e}^{t\,x}}{\sqrt{x^2-2\,x+2}\,\left(1+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)\right)^2}\,\mathrm{d}x$$

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

"i is", 20,

" --"

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

$$l := 0$$

$$u := \infty$$

$$\mathit{Temp} := \left[\left[y\sim \rightarrow -\frac{2}{(\mathrm{arctanh}(y\sim)+2)^2\,(y\sim^2-1)}\right],\ [0,1],\ [\text{"Continuous"}, \text{"PDF"}]\right]$$

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

$$\text{"g(x)"},\ \tanh\left(\frac{1}{x}\right),\ \text{"base"},\ \frac{2}{(1+2\,x)^2},\ \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"},\ -\frac{2}{(\mathrm{arctanh}(x)+2)^2\,(x^2-1)}$$

$$\text{"F(x)"},\ \frac{\mathrm{arctanh}(x)}{\mathrm{arctanh}(x)+2}$$

$$\text{"IDF(x)"},\ \left[\left[s \rightarrow -\tanh\left(\frac{2\,s}{s-1}\right)\right],\ [0,1],\ [\text{"Continuous"}, \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ \frac{2}{\mathrm{arctanh}(x)+2}$$

$$\text{"h(x)"},\ -\frac{1}{(\mathrm{arctanh}(x)+2)\,(x^2-1)}$$

$$\text{"mean and variance"},\ -2\left(\int_{0}^{1}\frac{x}{(\mathrm{arctanh}(x)+2)^2\,(x^2-1)}\,\mathrm{d}x\right),\ -2\left(\int_{0}^{1}\frac{x^2}{(\mathrm{arctanh}(x)+2)^2\,(x^2-1)}\,\mathrm{d}x\right)-4\left(\int_{0}^{1}\frac{x}{(\mathrm{arctanh}(x)+2)^2\,(x^2-1)}\,\mathrm{d}x\right)^2$$

$$mf := \int_0^1 \left(-\frac{2\,x^{r\sim}}{(\operatorname{arctanh}(x)+2)^2\,(x^2-1)} \right) dx$$

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

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

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

"i is", 21,

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

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

$$l := 0$$

$$u := \infty$$

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

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

$$\text{"g(x)"}, \operatorname{csch}\left(\frac{1}{x}\right), \text{"base"}, \frac{2}{(1+2\,x)^2}, \text{"LomaxRV(1, 2)"}$$

$$\text{"f(x)"}, \frac{2}{\sqrt{x^2+1}\,(\operatorname{arccsch}(x)+2)^2\,|x|}$$

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

"IDF did not work"

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

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

$$\text{"mean and variance"}, \infty, \mathit{undefined}$$

$$mf := \int_0^\infty \frac{2\,x^{r\sim}}{\sqrt{x^2+1}\,(\operatorname{arccsch}(x)+2)^2\,|x|}\, dx$$

$$"MF", \int_0^{\infty} \frac{2\, x^{r\sim}}{\sqrt{x^2+1}\ (\mathrm{arccsch}(x)+2)^2 |x|}\, dx$$

$$"MGF", \int_0^{\infty} \frac{2\, e^{t\, x}}{\sqrt{x^2+1}\ (\mathrm{arccsch}(x)+2)^2 x}\, dx$$

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

"i is", 22,

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

$$g := t \rightarrow \mathrm{arccsch}\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \rightarrow \frac{2\cosh(y\sim)}{4\cosh(y\sim)^2+4\sinh(y\sim)-3}\right], [0, \infty], ["Continuous", "PDF"]\right]$$

$$"l and u", 0, \infty$$

$$"g(x)", \mathrm{arccsch}\left(\frac{1}{x}\right), "base", \frac{2}{(1+2\,x)^2}, "LomaxRV(1, 2)"$$

$$"f(x)", \frac{2\cosh(x)}{4\cosh(x)^2+4\sinh(x)-3}$$

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

ERROR(IDF): Could not find the appropriate inverse

$$"IDF(x)", \left[\left[s \rightarrow -\ln(2)+\ln\left(-\frac{s+\sqrt{5\,s^2-8\,s+4}}{s-1}\right)\right], [0, 1], ["Continuous", "IDF"]\right]$$

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

$$"h(x)", -\frac{2\cosh(x)\,(-e^{x}-1+e^{-x})}{4\cosh(x)^2+4\sinh(x)-3}$$

$$"mean and variance", \frac{1}{5}\left(\ln(2)-\ln\left(7-3\sqrt{5}\right)\right)\sqrt{5}, \frac{2}{5}\sqrt{5}\ln(2)^2-\frac{4}{5}\sqrt{5}\ln\left(\sqrt{5}\right.$$
$$\left.-1\right)\ln(2)+\frac{1}{5}\sqrt{5}\ln\left(\sqrt{5}-1\right)^2+\frac{2}{5}\sqrt{5}\ln\left(\sqrt{5}-1\right)\ln\left(\sqrt{5}+1\right)$$
$$-\frac{1}{5}\sqrt{5}\ln\left(\sqrt{5}+1\right)^2+\frac{2}{15}\sqrt{5}\,\pi^2+\frac{2}{5}\sqrt{5}\,\mathrm{dilog}\left(\frac{1}{2}+\frac{1}{2}\sqrt{5}\right)$$
$$+\frac{2}{5}\sqrt{5}\,\mathrm{dilog}\left(\frac{\sqrt{5}+3}{\sqrt{5}+1}\right)-\frac{1}{5}\ln(2)^2+\frac{2}{5}\ln(2)\ln\left(7-3\sqrt{5}\right)-\frac{1}{5}\ln\left(7\right.$$

$$-3\sqrt{5}\,\Big)^2$$

$$mf := \int_0^{\infty} \frac{2\,x^{r\sim}\cosh(x)}{4\cosh(x)^2+4\sinh(x)-3}\,\mathrm{d}x$$

$$\text{"MF"}, \int_0^{\infty} \frac{2\,x^{r\sim}\cosh(x)}{4\cosh(x)^2+4\sinh(x)-3}\,\mathrm{d}x$$

$$\text{"MGF"}, \int_0^{\infty} \frac{2\,\mathrm{e}^{t\,x}\cosh(x)}{4\cosh(x)^2+4\sinh(x)-3}\,\mathrm{d}x$$

```
2\,{\frac {\cosh \left( x \right) }{4\, \left( \cosh \left( x
\right)
 \right) ^{2}+4\,\sinh \left( x \right) -3}}
```