```
> 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 := ExponentialPowerRV(2,3);
  bfname := "ExponentialPowerRV(2,3)";
```

$$bf := \left[\left[x \to 6\, e^{1} - e^{2x^3}\, e^{2x^3}\, x^2\right], [0, \infty], ["Continuous", "PDF"]\right]$$

$$bfname := "ExponentialPowerRV(2,3)" \quad \textbf{(1)}$$

```
> #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);
```

$$-\ln(y) \quad \textbf{(2)}$$

```
> # discarded  -ln(t + 1),  t-> csch(t),t->arccsch(t),t -> tan(t),
> #name of the file for latex output
  filename := "C:/LatexOutput/ExponentialPower.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 and i <> 17 and i <> 19 and i <> 20 and i <> 21 then
  print("IDF(x)", IDF(Temp));
  end if;
  print("S(x)", SF(Temp, x));
  print("h(x)", HF(Temp, x));
  if i <> 15 and i <> 18 and i <> 21 then
  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);
  if i <> 20 then
  PlotDist(HF(Temp), 0, 40);
  end if;
  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));
  end if;

  #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 and i <> 17 and i <> 19 and i <> 20 and i <> 21 then

    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("$$");
    if i <> 15 and i <> 18 and i <> 21 then
    printf("Mean \n $$ \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]);
    end if;

    writeto(terminal);


  od;

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

$$filename := \text{"C:/LatexOutput/ExponentialPower.tex"}$$

$$6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2$$

"i is", 1,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 3\, e^{1-e^{2y\sim^{3/2}}+2y\sim^{3/2}}\sqrt{y\sim}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

"g(x)", x^2, "base", $6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $3\, e^{1-e^{2x^{3/2}}+2x^{3/2}}\sqrt{x}$

$$\text{"F(x)"},\ 1-e^{1-e^{2x^{3/2}}}$$

$$\text{"IDF(x)"},\ \left[\left[s\to \frac{1}{2}\ 2^{1/3}\ln(1-\ln(1-s))^{2/3}\right],\ [0,1],\ [\text{"Continuous"},\ \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ e^{1-e^{2x^{3/2}}}$$

$$\text{"h(x)"},\ 3\ e^{2x^{3/2}}\sqrt{x}$$

$$\text{"mean and variance"},\ \int_0^\infty 3\ x^{3/2}\ e^{1-e^{2x^{3/2}}+2x^{3/2}}\,dx,\ \int_0^\infty 3\ x^{5/2}\ e^{1-e^{2x^{3/2}}+2x^{3/2}}\,dx$$

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

$$\text{"MF"},\ \int_0^\infty 3\ x^{r\sim}\ e^{1-e^{2x^{3/2}}+2x^{3/2}}\sqrt{x}\,dx$$

$$\text{"MGF"},\ \int_0^\infty 3\sqrt{x}\ e^{tx+1-e^{2x^{3/2}}+2x^{3/2}}\,dx$$

```
3\,{{\rm e}^{1-{{\rm e}^{2\,{x}^{3/2}}}+2\,{x}^{3/2}}}\sqrt {x}
```

"i is", 2,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim\to 12\ e^{1-e^{2y\sim^6}+2y\sim^6}\ y\sim^5\right],\ [0,\ \infty],\ [\text{"Continuous"},\ \text{"PDF"}]\right]$$

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

$$\text{"g(x)"},\ \sqrt{x},\ \text{"base"},\ 6\ e^{1-e^{2x^3}}\ e^{2x^3}\ x^2,\ \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"},\ 12\ e^{1-e^{2x^6}+2x^6}\ x^5$$

$$\text{"F(x)"},\ 1-e^{1-e^{2x^6}}$$

$$\text{"IDF(x)"},\ \left[\left[s\to \frac{1}{2}\ 2^{5/6}\ln(1-\ln(1-s))^{1/6}\right],\ [0,1],\ [\text{"Continuous"},\ \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ e^{1-e^{2x^6}}$$

$$\text{"h(x)"},\ 12\ e^{2x^6}\ x^5$$

$$\text{"mean and variance"},\ \int_0^\infty 12\ x^6\ e^{1-e^{2x^6}+2x^6}\,dx,\ \int_0^\infty 12\ x^7\ e^{1-e^{2x^6}+2x^6}\,dx$$

$$-\left(\int_0^\infty 12\ x^6\ e^{1-e^{2x^6}+2x^6}\,dx\right)^2$$

$$\text{"MF"}, \int_0^{\infty} 12\, x^{r\sim}\, e^{1-e^{2x^6}+2x^6}\, x^5\, dx$$

$$\text{"MGF"}, \int_0^{\infty} 12\, x^5\, e^{tx+1-e^{2x^6}+2x^6}\, dx$$

```
12\,{{\rm e}^{1-{{\rm e}^{2\,{x}^{6}}}+2\,{x}^{6}}}{x}^{5}
```

"i is", 3,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\, e^{-\frac{e^{\frac{2}{y\sim^3}}\, y\sim^3 - y\sim^3 - 2}{y\sim^3}}}{y\sim^4}\right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"}, \frac{1}{x}, \text{"base"}, 6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2, \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"}, \frac{6\, e^{-\frac{e^{\frac{2}{x^3}}\, x^3 - x^3 - 2}{x^3}}}{x^4}$$

$$\text{"F(x)"}, e^{-e^{\frac{2}{x^3}}+1}$$

$$\text{"IDF(x)"}, \left[\left[s \to \frac{2^{1/3}\left(\ln(1-\ln(s))^2\right)^{1/3}}{\ln(1-\ln(s))}\right], [0, 1], [\text{"Continuous"}, \text{"IDF"}]\right]$$

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

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

$$\text{"mean and variance"}, \int_0^{\infty} \frac{6\, e^{-\frac{e^{\frac{2}{x^3}}\, x^3 - x^3 - 2}{x^3}}}{x^3}\, dx, \int_0^{\infty} \frac{6\, e^{-\frac{e^{\frac{2}{x^3}}\, x^3 - x^3 - 2}{x^3}}}{x^2}\, dx$$

$$-\left(\int_0^{\infty} \frac{6\,e^{-\frac{e^{\frac{2}{x^3}}\,x^3-x^3-2}{x^3}}}{x^3}\,dx\right)^2$$

$$\text{"MF"}, \int_0^{\infty} \frac{6\,x^{r\sim}\,e^{-\frac{e^{\frac{2}{x^3}}\,x^3-x^3-2}{x^3}}}{x^4}\,dx$$

$$\text{"MGF"}, \int_0^{\infty} \frac{6\,e^{-\frac{-t\,x^4+e^{\frac{2}{x^3}}\,x^3-x^3-2}{x^3}}}{x^4}\,dx$$

```
6\,{\frac {1}{{x}^{4}}{{\rm e}^{-{\frac {1}{{x}^{3}} \left( {
{\rm e}^{
2\,{x}^{-3}}}{x}^{3}-{x}^{3}-2 \right) }}}}
```

"i is", 4,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\,e^{1-e^{2\tan(y\sim)^3}+2\tan(y\sim)^3}\tan(y\sim)^2\left(1+\tan(y\sim)^2\right)\right], \left[0, \frac{1}{2}\,\pi\right], \text{["Continuous", "PDF"]}\right]$$

"l and u", 0, ∞

"g(x)", $\arctan(x)$, "base", $6\,e^{1-e^{2x^3}}\,e^{2x^3}\,x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $6\,e^{1-e^{2\tan(x)^3}+2\tan(x)^3}\tan(x)^2\left(1+\tan(x)^2\right)$

$$\text{"F(x)"}, \begin{cases} 1-e^{1-e^{2\tan(x)^3}} & x \le \frac{1}{2}\,\pi \\ e\,\text{floor}\left(-\frac{1}{2}\,\frac{-2x+\pi}{\pi}\right)+e+1-e^{1-e^{2\tan(x)^3}} & \frac{1}{2}\,\pi < x \end{cases}$$

$$\text{"IDF(x)"}, \left[\left[s \to RootOf\left(-e\,\text{floor}\left(-\frac{1}{2}\,\frac{-2\_Z+\pi}{\pi}\right)-e-1+e^{1-e^{2\tan(\_Z)^3}}+s\right)\right], [0, 1],$$

$$\left[\text{"Continuous"}, \text{"IDF"}\right]\Bigg]$$

$$\text{"S(x)"}, \begin{cases} e^{1-e^{2\tan(x)^3}} & x \le \frac{1}{2}\pi \\ -e\,\text{floor}\left(-\frac{1}{2}\,\frac{-2x+\pi}{\pi}\right) - e + e^{1-e^{2\tan(x)^3}} & \frac{1}{2}\pi < x \end{cases}$$

$$\text{"h(x)"}, \begin{cases} \frac{6\,e^{\frac{2\sin(x)^3}{\cos(x)^3}}\sin(x)^2}{\cos(x)^4} & x \le \frac{1}{2}\pi \\ -\frac{6\,e^{\frac{2\sin(x)^3}{\cos(x)^3}}\left(\cos(x)^3+2\sin(x)\cos(x)^2-\cos(x)^3-2\sin(x)\right)}{\cos(x)^3}\sin(x)^2 & \frac{1}{2}\pi < x \\ \hline \cos(x)^4\left(e\,\text{floor}\left(-\frac{1}{2}\,\frac{-2x+\pi}{\pi}\right)+e-e^{1-e^{\frac{2\sin(x)^3}{\cos(x)^3}}}\right) & \end{cases}$$

$$\text{"mean and variance"}, 6\left(\int_0^{\frac{1}{2}\pi} x\,e^{1-e^{2\tan(x)^3}+2\tan(x)^3}\tan(x)^2\left(1+\tan(x)^2\right)dx\right), 6\left(\int_0^{\frac{1}{2}\pi} x^2\,e^{1-e^{2\tan(x)^3}+2\tan(x)^3}\tan(x)^2\left(1+\tan(x)^2\right)dx\right) - 36\left(\int_0^{\frac{1}{2}\pi} x\,e^{1-e^{2\tan(x)^3}+2\tan(x)^3}\tan(x)^2\left(1+\tan(x)^2\right)dx\right)^2$$

$$\text{"MF"}, \int_0^{\frac{1}{2}\pi} 6\,x^{r\sim}\,e^{1-e^{2\tan(x)^3}+2\tan(x)^3}\tan(x)^2\left(1+\tan(x)^2\right)dx$$

$$\text{"MGF"}, 6\left(\int_0^{\frac{1}{2}\pi} \tan(x)^2\left(1+\tan(x)^2\right)e^{tx+1-e^{2\tan(x)^3}+2\tan(x)^3}\,dx\right)$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, $\frac{1}{2}\pi$

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random*

variable, $\frac{1}{2}\ \pi$

Resetting high to RV's maximum support value

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

"i is", 5,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\, e^{1-e^{2\ln(y\sim)^3}+2\ln(y\sim)^3}\ln(y\sim)^2}{y\sim}\right], [1,\ \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", e^{x}, "base", $6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2$, "ExponentialPowerRV(2,3)"

$$"f(x)",\ \frac{6\, e^{1-e^{2\ln(x)^3}+2\ln(x)^3}\ln(x)^2}{x}$$

$$"F(x)",\ 1-e^{1-e^{2\ln(x)^3}}$$

$$"IDF(x)",\ \left[\left[s\to e^{\frac{1}{2}\,2^{2/3}\ln(1-\ln(1-s))^{1/3}}\right], [0,\ 1], ["Continuous", "IDF"]\right]$$

$$"S(x)",\ e^{1-e^{2\ln(x)^3}}$$

$$"h(x)",\ \frac{6\, e^{2\ln(x)^3}\ln(x)^2}{x}$$

$$"mean and variance",\ \int_1^{\infty} 6\, e^{1-e^{2\ln(x)^3}+2\ln(x)^3}\ln(x)^2\,dx,\ \int_1^{\infty} 6\, x\, e^{1-e^{2\ln(x)^3}+2\ln(x)^3}\ln(x)^2\,dx - \left(\int_1^{\infty} 6\, e^{1-e^{2\ln(x)^3}+2\ln(x)^3}\ln(x)^2\,dx\right)^2$$

$$"MF",\ \int_1^{\infty} \frac{6\, x^{r\sim}\, e^{1-e^{2\ln(x)^3}+2\ln(x)^3}\ln(x)^2}{x}\,dx$$

$$"MGF",\ \int_1^{\infty} \frac{6\ln(x)^2\, e^{tx+1-e^{2\ln(x)^3}+2\ln(x)^3}}{x}\,dx$$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable

Resetting low to RV's minimum support value

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable

1

Resetting low to RV's minimum support value

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

"i is", 6,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\, e^{1-e^{2\,e^{3\,y\sim}+2\,e^{3\,y\sim}+3\,y\sim}}\right], [-\infty, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\ln(x)$, "base", $6\, e^{1-e^{2\,x^3}}\, e^{2\,x^3}\, x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $6\, e^{1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}$

"F(x)", $1-e^{1-e^{2\,e^{3\,x}}}$

"IDF(x)", $\left[\left[s \to -\frac{1}{3}\,\ln(2)+\frac{1}{3}\,\ln(\ln(1-\ln(1-s)))\right], [0, 1], ["Continuous", "IDF"]\right]$

"S(x)", $e^{1-e^{2\,e^{3\,x}}}$

"h(x)", $6\, e^{2\,e^{3\,x}+3\,x}$

"mean and variance", $\int_{-\infty}^{\infty} 6\,x\,e^{1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}\,dx$, $\int_{-\infty}^{\infty} 6\,x^2\,e^{1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}\,dx$

$$-\left(\int_{-\infty}^{\infty} 6\,x\,e^{1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}\,dx\right)^2$$

"MF", $\int_{-\infty}^{\infty} 6\,x^{r\sim}\,e^{1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}\,dx$

"MGF", $\int_{-\infty}^{\infty} 6\,e^{t\,x+1-e^{2\,e^{3\,x}+2\,e^{3\,x}+3\,x}}\,dx$

```
6\,{{\rm e}^{1-{{\rm e}^{2\,{{\rm e}^{3\,x}}}+2\,{{\rm e}^{3\,
x}}+3\,
x}}
```

"i is", 7,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\, e^{1-e^{-2\ln(y\sim)^3}-2\ln(y\sim)^3}\ln(y\sim)^2}{y\sim} \right], [0, 1], ["\text{Continuous}", "\text{PDF}"] \right]$$

"l and u", 0, ∞

"g(x)", e^{-x}, "base", $6\, e^{1-e^{2x^3}} e^{2x^3} x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $\frac{6\, e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2}{x}$

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

ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

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

"S(x)", $1 - e^{-e^{-2\ln(x)^3}+1}$

"h(x)", $-\frac{6\, e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2}{x\left(-1+e^{-e^{-2\ln(x)^3}+1}\right)}$

"mean and variance", $6\left(\int_0^1 e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2\,dx\right)$, $6\left(\int_0^1 x\, e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2\,dx\right) - 36\left(\int_0^1 e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2\,dx\right)^2$

"MF", $\int_0^1 \frac{6\, x^{r\sim}\, e^{1-e^{-2\ln(x)^3}-2\ln(x)^3}\ln(x)^2}{x}\,dx$

"MGF", $6\left(\int_0^1 \frac{\ln(x)^2\, e^{tx+1-e^{-2\ln(x)^3}-2\ln(x)^3}}{x}\,dx\right)$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, 1

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, 1

Resetting high to RV's maximum support value

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

```
 \left( \ln  \left( x \right)  \right) ^{2}}{x}}
```

"i is", 8,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\, e^{1-e^{2\,e^{-3\,y\sim}}+2\,e^{-3\,y\sim}-3\,y\sim}\right], [-\infty, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $-\ln(x)$, "base", $6\, e^{1-e^{2\,x^3}}\, e^{2\,x^3}\, x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $6\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}$

"F(x)", $e^{-e^{2\,e^{-3\,x}}+1}$

"IDF(x)", $\left[\left[s \to \frac{1}{3}\ln(2) - \frac{1}{3}\ln(\ln(1-\ln(s)))\right], [0, 1], ["Continuous", "IDF"]\right]$

"S(x)", $1 - e^{-e^{2\,e^{-3\,x}}+1}$

"h(x)", $-\frac{6\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}}{-1+e^{-e^{2\,e^{-3\,x}}+1}}$

"mean and variance", $\int_{-\infty}^{\infty} 6\,x\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}\,dx$, $\int_{-\infty}^{\infty} 6\,x^2\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}\,dx$

$$-\left(\int_{-\infty}^{\infty} 6\,x\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}\,dx\right)^2$$

"MF", $\int_{-\infty}^{\infty} 6\,x^{r\sim}\, e^{1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}\,dx$

"MGF", $\int_{-\infty}^{\infty} 6\, e^{t\,x+1-e^{2\,e^{-3\,x}}+2\,e^{-3\,x}-3\,x}\,dx$

```
6\,{{\rm e}^{1-{{\rm e}^{2\,{{\rm e}^{-3\,x}}}}+2\,{{\rm e}^
{-3\,x}}-3
\,x}}
```

"i is", 9,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\, e^{2\,e^{3\,y\sim}-6\,e^{2\,y\sim}-e^{2\,(e^{y\sim}-1)^3}+6\,e^{y\sim}+y\sim-1}\left(e^{y\sim}-1\right)^2\right], [0, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\ln(x+1)$, "base", $6\,e^{1-e^{2x^3}}\,e^{2x^3}\,x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $6\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,(e^x-1)^2$

"F(x)", $-\left(-e^{e^{2e^{3x}-6e^{2x}+6e^x-2}}+e\right)e^{-e^{2e^{3x}-6e^{2x}+6e^x-2}}$

"IDF(x)", $\left[\left[s\to -\frac{1}{3}\ln(2)+\ln\left(\ln\left(\ln\left(-\frac{1}{s-1}\right)+1\right)^{1/3}+2^{1/3}\right)\right],[0,1],[\text{"Continuous"},\text{"IDF"}]\right]$

"S(x)", $e^{-e^{2e^{3x}-6e^{2x}+6e^x-2}+1}$

"h(x)", $6\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-2+e^{2e^{3x}-6e^{2x}+6e^x-2}}}\,(e^x-1)^2$

"mean and variance", $\int_0^\infty 6x\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,(e^x-1)^2\,dx$,

$\int_0^\infty 6x^2\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,(e^x-1)^2\,dx$

$-\left(\int_0^\infty 6x\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,(e^x-1)^2\,dx\right)^2$

"MF", $\int_0^\infty 6x^{t\sim}\,e^{2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,(e^x-1)^2\,dx$

"MGF", $\int_0^\infty 6\,(e^x-1)^2\,e^{tx+2e^{3x}-6e^{2x}-e^{2(e^x-1)^3+6e^x+x-1}}\,dx$

```
6\,{{\rm e}^{2\,{{\rm e}^{3\,x}}-6\,{{\rm e}^{2\,x}}-{{\rm e}^{2\,
 \left( {{\rm e}^{x}}-1 \right) ^{3}}}+6\,{{\rm e}^{x}}+x-1}}
\left( {
{\rm e}^{x}}-1 \right) ^{2}
```

"i is", 10,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[\left[y\sim\to \frac{6\left(e^{\frac{1}{y\sim}}-2\right)^2\,e^{\frac{2e^{\frac{3}{y\sim}}\,y\sim-12\,e^{\frac{2}{y\sim}}\,y\sim-e^2\left(e^{\frac{1}{y\sim}}-2\right)^3\,y\sim+24\,e^{\frac{1}{y\sim}}\,y\sim-15\,y\sim+1}{y\sim}}}{y\sim^2}\right],\left[0,\right.\right.\right.$$

$$\frac{1}{\ln(2)}\Bigg], [\text{"Continuous"}, \text{"PDF"}]\Bigg]$$

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

$$\text{"g(x)"}, \frac{1}{\ln(x+2)}, \text{"base"}, 6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2, \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"}, \frac{6\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{2e^{\frac{3}{x}}x-12e^{\frac{2}{x}}x-e^2\left(e^{\frac{1}{x}}-2\right)^3 x+24e^{\frac{1}{x}}x-15x+1}{x}}}{x^2}$$

$$\text{"F(x)"}, e^{-\left(e^{2e^{\frac{3}{x}}+24e^{\frac{1}{x}}-16}-e^{12e^{\frac{2}{x}}}\right)e^{-12e^{\frac{2}{x}}}}$$

ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse

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

$$\text{"S(x)"}, 1-e^{-\left(e^{2e^{\frac{3}{x}}+24e^{\frac{1}{x}}-16}-e^{12e^{\frac{2}{x}}}\right)e^{-12e^{\frac{2}{x}}}}$$

$$\text{"h(x)"}, -\frac{6\left(e^{\frac{1}{x}}-2\right)^2 e^{-\frac{-2e^{\frac{3}{x}}x+12e^{\frac{2}{x}}x+e^2\left(e^{\frac{1}{x}}-2\right)^3 x-24e^{\frac{1}{x}}x+15x-1}{x}}}{x^2\left(-1+e^{-e^{-12e^{\frac{2}{x}}}+2e^{\frac{3}{x}}+24e^{\frac{1}{x}}-16}+1\right)}$$

$$\text{"mean and variance"}, 6\left(\int_0^{\frac{1}{\ln(2)}} \frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{-\frac{-2e^{\frac{3}{x}}x+12e^{\frac{2}{x}}x+e^2\left(e^{\frac{1}{x}}-2\right)^3 x-24e^{\frac{1}{x}}x+15x-1}{x}}}{x}dx\right), 6\left(\int_0^{\frac{1}{\ln(2)}} \left(e^{\frac{1}{x}}-2\right)^2 e^{-\frac{-2e^{\frac{3}{x}}x+12e^{\frac{2}{x}}x+e^2\left(e^{\frac{1}{x}}-2\right)^3 x-24e^{\frac{1}{x}}x+15x-1}{x}}dx\right)$$

$$-36\left(\int_0^{\frac{1}{\ln(2)}} \frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{-\frac{-2e^{\frac{3}{x}}x+12e^{\frac{2}{x}}x+e^2\left(e^{\frac{1}{x}}-2\right)^3 x-24e^{\frac{1}{x}}x+15x-1}{x}}}{x}\,dx\right)^2$$

$$\text{"MF"},\int_0^{\frac{1}{\ln(2)}} \frac{6x^{r\sim}\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{2e^{\frac{3}{x}}x-12e^{\frac{2}{x}}x-e^2\left(e^{\frac{1}{x}}-2\right)^3 x+24e^{\frac{1}{x}}x-15x+1}{x}}}{x^2}\,dx$$

$$\text{"MGF"},6\left(\int_0^{\frac{1}{\ln(2)}} \frac{\left(e^{\frac{1}{x}}-2\right)^2 e^{\frac{2e^{\frac{3}{x}}x-12e^{\frac{2}{x}}x+tx^2-e^2\left(e^{\frac{1}{x}}-2\right)^3 x+24e^{\frac{1}{x}}x-15x+1}{x}}}{x^2}\,dx\right)$$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* $\frac{1}{\ln(2)}$

Resetting high to RV's maximum support value

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* $\frac{1}{\ln(2)}$

Resetting high to RV's maximum support value

```
6\,{\frac { \left( {{\rm e}^{{x}^{-1}}}-2 \right) ^{2}}{{x}^{2}}
{
{\rm e}^{{\frac {1}{x} \left( 2\,{{\rm e}^{3\,{x}^{-1}}}x-12\,{
{\rm e}
^{2\,{x}^{-1}}}x-{{\rm e}^{2\, \left( {{\rm e}^{{x}^{-1}}}-2
\right) ^
{3}}}x+24\,{{\rm e}^{{x}^{-1}}}x-15\,x+1 \right) }}}}
```

"i is", 11,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to -\frac{6e^{1-e^{2\,\text{arctanh}(y\sim)^3}+2\,\text{arctanh}(y\sim)^3}\,\text{arctanh}(y\sim)^2}{y\sim^2-1}\right],[0,1],[\text{"Continuous"},\right.$$

"PDF"]]

"l and u", 0, ∞

"g(x)", $\tanh(x)$, "base", $6\, e^{1-e^{2x^3}} e^{2x^3} x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $-\frac{6\, e^{1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}\,\mathrm{arctanh}(x)^2}{x^2-1}$

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

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

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

"h(x)",

$$-\frac{1}{x^2-1}\left(6\, e^{-\frac{1}{\left((1-x)\ln(x+1)^2\right)^{3/4}\left(e^{\ln(1-x)^3}\right)^{1/4}}}\left(-2\,\mathrm{arctanh}(x)^3\left((1-x)\ln(x+1)^2\right)^{3/4}\left(e^{\ln(1-x)^3}\right)^{1/4}+e^{2\,\mathrm{arctanh}(x)^3}\left((1-x)\ln(x+1)^2\right)^{3/4}\left(e^{\ln(1-x)^3}\right)^{1/4}-e^{\frac{1}{4}\ln(x+1)^3}\left((x+1)\ln(1-x)^2\right)^{3/4}\right)\mathrm{arctanh}(x)^2\right)$$

"mean and variance", $-6\left(\int_0^1 \frac{x\, e^{1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}\,\mathrm{arctanh}(x)^2}{x^2-1}\,dx\right)$, $-6\left(\int_0^1 \frac{x^2\, e^{1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}\,\mathrm{arctanh}(x)^2}{x^2-1}\,dx\right)-36\left(\int_0^1 \frac{x\, e^{1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}\,\mathrm{arctanh}(x)^2}{x^2-1}\,dx\right)^2$

$$\text{"MF"}, \int_0^1 \left(-\frac{6\, x^{r\sim}\, e^{1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}\,\mathrm{arctanh}(x)^2}{x^2-1} \right) dx$$

$$\text{"MGF"}, -6 \left(\int_0^1 \frac{\mathrm{arctanh}(x)^2\, e^{t\,x+1-e^{2\,\mathrm{arctanh}(x)^3}+2\,\mathrm{arctanh}(x)^3}}{x^2-1}\, dx \right)$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random variable, 1
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random variable, 1
Resetting high to RV's maximum support value

```
-6\,{\frac {{{\rm e}^{1-{{\rm e}^{2\, \left( {\rm arctanh} \left(x
\right) \right) ^{3}}}+2\, \left( {\rm arctanh} \left(x\right)
 \right) ^{3}}} \left( {\rm arctanh} \left(x\right) \right) ^{2}
}{{x}^
{2}-1}}
```

"i is", 12,
" ----------"

$$g := t \to \sinh(t)$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\, e^{1-e^{2\,\mathrm{arcsinh}(y\sim)^3}+2\,\mathrm{arcsinh}(y\sim)^3}\,\mathrm{arcsinh}(y\sim)^2}{\sqrt{y\sim^2+1}} \right], [0, \infty], [\text{"Continuous"}, \text{"PDF"}] \right]$$

"l and u", 0, ∞

"g(x)", $\sinh(x)$, "base", $6\, e^{1-e^{2x^3}}\, e^{2x^3}\, x^2$, "ExponentialPowerRV(2,3)"

$$\text{"f(x)"}, \frac{6\, e^{1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}$$

$$\text{"F(x)"}, 1-e^{1-e^{-2\ln\left(-x+\sqrt{x^2+1}\right)^3}}$$

ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

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

$$\text{"S(x)"},\ e^{1-e^{-2\ln\left(-x+\sqrt{x^2+1}\right)^3}}$$

$$\text{"h(x)"},\ \frac{6\,e^{-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3+e^{-2\ln\left(-x+\sqrt{x^2+1}\right)^3}}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}$$

$$\text{"mean and variance"},\ \int_0^\infty \frac{6\,x\,e^{1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}\,dx,$$

$$\int_0^\infty \frac{6\,x^2\,e^{1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}\,dx$$

$$-\left(\int_0^\infty \frac{6\,x\,e^{1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}\,dx\right)^2$$

$$\text{"MF"},\ \int_0^\infty \frac{6\,x^{r\sim}\,e^{1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}\,\mathrm{arcsinh}(x)^2}{\sqrt{x^2+1}}\,dx$$

$$\text{"MGF"},\ \int_0^\infty \frac{6\,\mathrm{arcsinh}(x)^2\,e^{tx+1-e^{2\,\mathrm{arcsinh}(x)^3}+2\,\mathrm{arcsinh}(x)^3}}{\sqrt{x^2+1}}\,dx$$

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

"i is", 13,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\,e^{1-e^{2\sinh(y\sim)^3}+2\sinh(y\sim)^3}\sinh(y\sim)^2\cosh(y\sim)\right],\ [0,\ \infty],\ [\text{"Continuous"},\ \text{"PDF"}]\right]$$

"l and u", 0, ∞

$$\text{"g(x)"},\ \operatorname{arcsinh}(x),\ \text{"base"},\ 6\,e^{1-e^{2x^3}}\,e^{2x^3}\,x^2,\ \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"},\ 6\,e^{1-e^{2\sinh(x)^3}+2\sinh(x)^3}\sinh(x)^2\cosh(x)$$

$$\text{"F(x)"},\ -\left(-e^{\frac{1}{4}\left(e^{6x}-3e^{4x}+3e^{2x}-1\right)e^{-3x}}+e\right)e^{-e^{\frac{1}{4}\left(e^{6x}-3e^{4x}+3e^{2x}-1\right)e^{-3x}}}$$

$$\text{"IDF(x)"},\ \left[\left[\ln@\left(s\to RootOf\left(\_Z^6-3\,\_Z^4-4\ln\left(\ln\left(-\frac{1}{s-1}\right)+1\right)\_Z^3+3\,\_Z^2-1\right)\right)\right],\ [0,1],\ [\text{"Continuous"},\ \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ e^{-e^{\frac{1}{4}\left(e^{6x}-3e^{4x}+3e^{2x}-1\right)e^{-3x}}+1}$$

$$\text{"h(x)"},\ 6\,e^{-e^{2\sinh(x)^3}+2\sinh(x)^3+e^{\frac{1}{4}\left(e^{6x}-3e^{4x}+3e^{2x}-1\right)e^{-3x}}}\sinh(x)^2\cosh(x)$$

$$\text{"mean and variance"},\ \int_0^\infty 6\,e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x\,dx,$$

$$\int_0^\infty 6\,e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x^2\,dx$$

$$-\left(\int_0^\infty 6\,e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x\,dx\right)^2$$

$$\text{"MF"},\ \int_0^\infty 6\,x^{r\sim}\,e^{1-e^{2\sinh(x)^3}+2\sinh(x)^3}\sinh(x)^2\cosh(x)\,dx$$

$$\text{"MGF"},\ \int_0^\infty 6\,e^{tx+1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,dx$$

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

"i is", 14,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim\right.\right.$$

$$\to \frac{6\, e^{2\,\mathrm{arccsch}(y\sim)^3 - 6\,\mathrm{arccsch}(y\sim)^2 - e^2\,(-1+\mathrm{arccsch}(y\sim))^3 + 6\,\mathrm{arccsch}(y\sim) - 1}\,(-1+\mathrm{arccsch}(y\sim))^2}{\sqrt{y\sim^2+1}\;|y\sim|}\Bigg],$$

$$\left[0,\ -\frac{2}{-e+e^{-1}}\right],\ [\text{"Continuous"},\ \text{"PDF"}]\Bigg]$$

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

$$\text{"g(x)"},\ \mathrm{csch}(x+1),\ \text{"base"},\ 6\,e^{1-e^{2x^3}}\,e^{2x^3}\,x^2,\ \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"},\ \frac{6\, e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2\,(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}\,(-1+\mathrm{arccsch}(x))^2}{\sqrt{x^2+1}\;|x|}$$

$$\text{"F(x)"},\ 6\left(\int_0^x \frac{e^{2\,\mathrm{arccsch}(t)^3 - 6\,\mathrm{arccsch}(t)^2 - e^2\,(-1+\mathrm{arccsch}(t))^3 + 6\,\mathrm{arccsch}(t) - 1}\,(-1+\mathrm{arccsch}(t))^2}{\sqrt{t^2+1}\;|t|}\,dt\right)$$

$$\text{"S(x)"},\ 1-6\left(\int_0^x \frac{e^{2\,\mathrm{arccsch}(t)^3 - 6\,\mathrm{arccsch}(t)^2 - e^2\,(-1+\mathrm{arccsch}(t))^3 + 6\,\mathrm{arccsch}(t) - 1}\,(-1+\mathrm{arccsch}(t))^2}{\sqrt{t^2+1}\;|t|}\,dt\right)$$

$$\text{"h(x)"},\ -\left(6\, e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2\,(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}\,(-1+\mathrm{arccsch}(x))^2\right) \Big/$$

$$\left(\sqrt{x^2+1}\;|x|\left(-1+6\left(\int_0^x \frac{e^{2\,\mathrm{arccsch}(t)^3 - 6\,\mathrm{arccsch}(t)^2 - e^2\,(-1+\mathrm{arccsch}(t))^3 + 6\,\mathrm{arccsch}(t) - 1}\,(-1+\mathrm{arccsch}(t))^2}{\sqrt{t^2+1}\;|t|}\,dt\right)\right)\right)$$

$$\text{"mean and variance"},\ 6\left(\right.$$

$$\left(\int_0^{\frac{2e}{e^2-1}} \frac{e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}(-1+\mathrm{arccsch}(x))^2}{\sqrt{x^2+1}}\,dx \right.$$

$$, 6 \left(\int_0^{\frac{2e}{e^2-1}} \frac{x\, e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}(-1+\mathrm{arccsch}(x))^2}{\sqrt{x^2+1}}\,dx \right)$$

$$\left. - 36 \left(\int_0^{\frac{2e}{e^2-1}} \frac{e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}(-1+\mathrm{arccsch}(x))^2}{\sqrt{x^2+1}}\,dx \right)^2 \right)$$

$$dx$$

"MF",

$$\int_0^{-\frac{2}{-e+e^{-1}}} \frac{6\,x^{r\sim}\, e^{2\,\mathrm{arccsch}(x)^3 - 6\,\mathrm{arccsch}(x)^2 - e^2(-1+\mathrm{arccsch}(x))^3 + 6\,\mathrm{arccsch}(x) - 1}(-1+\mathrm{arccsch}(x))^2}{\sqrt{x^2+1}\,|x|}\,dx$$

"MGF", 6 $\left(\int_0^{\frac{2e}{e^2-1}} \frac{(-1+\operatorname{arccsch}(x))^2 e^{tx+2\operatorname{arccsch}(x)^3-6\operatorname{arccsch}(x)^2-e^{2(-1+\operatorname{arccsch}(x))^3+6\operatorname{arccsch}(x)-1}}}{\sqrt{x^2+1}\ x} dx \right)$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $-\frac{2}{-e+e^{-1}}$
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $-\frac{2}{-e+e^{-1}}$
Resetting high to RV's maximum support value

```
6\,{\frac {{{\rm e}^{2\, \left( {\rm arccsch} \left(x\right)
\right) ^
{3}-6\, \left( {\rm arccsch} \left(x\right) \right) ^{2}-{{\rm
e}^{2\,
 \left( -1+{\rm arccsch} \left(x\right) \right) ^{3}}}+6\,
{\rm arccsch} \left(x\right)-1}} \left( -1+{\rm arccsch} \left(x
\right) \right) ^{2}}{\sqrt {{x}^{2}+1} \left| x \right| }}
```

"i is", 15,
" ----------"

$$g := t \to \operatorname{arccsch}(t+1)$$
$$l := 0$$
$$u := \infty$$

$Temp := \left[\left[y\sim \right.\right.$

$$\to \frac{1}{\sinh(y\sim)^4}\left(6\,e^{-\frac{e^{-\frac{2(\sinh(y\sim)-1)^3}{\sinh(y\sim)^3}}\left(\sinh(y\sim)^3+\sinh(y\sim)^3-6\sinh(y\sim)^2+6\sinh(y\sim)-2\right)}{\sinh(y\sim)^3}}\left(\cosh(y\sim)^2-2\sinh(y\sim)\right)\cosh(y\sim)\right)\Bigg|, \left[0, \ln\left(1+\sqrt{2}\right)\right], \left["\text{Continuous}", "\text{PDF}"\right]\Bigg]$$

"l and u", 0, ∞

"g(x)", $\operatorname{arccsch}(x+1)$, "base", $6\,e^{1-e^{2x^3}}e^{2x^3}x^2$, "ExponentialPowerRV(2,3)"

"f(x)",

$$\frac{1}{\sinh(x)^4}\left(6\,e^{-\frac{e^{-\frac{2(\sinh(x)-1)^3}{\sinh(x)^3}}\left(\sinh(x)^3+\sinh(x)^3-6\sinh(x)^2+6\sinh(x)-2\right)}{\sinh(x)^3}}\left(\cosh(x)^2-2\sinh(x)\right)\cosh(x)\right)$$

"F(x)", $e^{-\left(e^{\frac{2\left(6e^{5x}+9e^{2x}+6e^{x}+1\right)}{e^{6x}-3e^{4x}+3e^{2x}-1}}-e^{\frac{2e^{3x}\left(e^{3x}+9e^{x}+4\right)}{e^{6x}-3e^{4x}+3e^{2x}-1}}\right)}e^{-\frac{2e^{3x}\left(e^{3x}+9e^{x}+4\right)}{e^{6x}-3e^{4x}+3e^{2x}-1}}$

"IDF(x)", [[ln@(s→*RootOf*((*RootOf*(4096 $\_Z^6$ + (12288 ln(1 − ln(s)) + 122880) $\_Z^5$ + (
-3840 ln(1 − ln(s))^2 − 1400832 ln(1 − ln(s)) + 1234944) $\_Z^4$ + (-28160 ln(1
− ln(s))^3 + 2893824 ln(1 − ln(s))^2 − 3240960 ln(1 − ln(s)) + 4218880) $\_Z^3$
+ (5040 ln(1 − ln(s))^4 − 2409216 ln(1 − ln(s))^3 + 4095744 ln(1 − ln(s))^2
− 10144512 ln(1 − ln(s)) + 617472) $\_Z^2$ + (21168 ln(1 − ln(s))^5 + 727200 ln(1
− ln(s))^4 − 964032 ln(1 − ln(s))^3 + 5531136 ln(1 − ln(s))^2 − 6592512 ln(1 − ln(s))
+ 30720) _Z − 9261 ln(1 − ln(s))^6 − 50976 ln(1 − ln(s))^5 − 162360 ln(1 − ln(s))^4
− 491552 ln(1 − ln(s))^3 − 908112 ln(1 − ln(s))^2 − 629376 ln(1 − ln(s)) + 512) + 2)
$\_Z^6$ + (-3 *RootOf*(4096 $\_Z^6$ + (12288 ln(1 − ln(s)) + 122880) $\_Z^5$ + (-3840 ln(1
− ln(s))^2 − 1400832 ln(1 − ln(s)) + 1234944) $\_Z^4$ + (-28160 ln(1 − ln(s))^3
+ 2893824 ln(1 − ln(s))^2 − 3240960 ln(1 − ln(s)) + 4218880) $\_Z^3$ + (5040 ln(1
− ln(s))^4 − 2409216 ln(1 − ln(s))^3 + 4095744 ln(1 − ln(s))^2 − 10144512 ln(1 − ln(s))
+ 617472) $\_Z^2$ + (21168 ln(1 − ln(s))^5 + 727200 ln(1 − ln(s))^4 − 964032 ln(1
− ln(s))^3 + 5531136 ln(1 − ln(s))^2 − 6592512 ln(1 − ln(s)) + 30720) _Z
− 9261 ln(1 − ln(s))^6 − 50976 ln(1 − ln(s))^5 − 162360 ln(1 − ln(s))^4
− 491552 ln(1 − ln(s))^3 − 908112 ln(1 − ln(s))^2 − 629376 ln(1 − ln(s)) + 512) + 18)
$\_Z^4$ + 8 $\_Z^3$ + 3 $\_Z^2$ *RootOf*(4096 $\_Z^6$ + (12288 ln(1 − ln(s)) + 122880) $\_Z^5$ + (

$$-3840\ln(1-\ln(s))^2-1400832\ln(1-\ln(s))+1234944)\_Z^4+(-28160\ln(1-\ln(s))^3+2893824\ln(1-\ln(s))^2-3240960\ln(1-\ln(s))+4218880)\_Z^3+(5040\ln(1-\ln(s))^4-2409216\ln(1-\ln(s))^3+4095744\ln(1-\ln(s))^2-10144512\ln(1-\ln(s))+617472)\_Z^2+(21168\ln(1-\ln(s))^5+727200\ln(1-\ln(s))^4-964032\ln(1-\ln(s))^3+5531136\ln(1-\ln(s))^2-6592512\ln(1-\ln(s))+30720)\_Z-9261\ln(1-\ln(s))^6-50976\ln(1-\ln(s))^5-162360\ln(1-\ln(s))^4-491552\ln(1-\ln(s))^3-908112\ln(1-\ln(s))^2-629376\ln(1-\ln(s))+512)-RootOf(4096\_Z^6+(12288\ln(1-\ln(s))+122880)\_Z^5+(-3840\ln(1-\ln(s))^2-1400832\ln(1-\ln(s))+1234944)\_Z^4+(-28160\ln(1-\ln(s))^3+2893824\ln(1-\ln(s))^2-3240960\ln(1-\ln(s))+4218880)\_Z^3+(5040\ln(1-\ln(s))^4-2409216\ln(1-\ln(s))^3+4095744\ln(1-\ln(s))^2-10144512\ln(1-\ln(s))+617472)\_Z^2+(21168\ln(1-\ln(s))^5+727200\ln(1-\ln(s))^4-964032\ln(1-\ln(s))^3+5531136\ln(1-\ln(s))^2-6592512\ln(1-\ln(s))+30720)\_Z-9261\ln(1-\ln(s))^6-50976\ln(1-\ln(s))^5-162360\ln(1-\ln(s))^4-491552\ln(1-\ln(s))^3-908112\ln(1-\ln(s))^2-629376\ln(1-\ln(s))+512)))],[0,1],["Continuous","IDF"]]$$

$$\text{"S(x)"},\ 1-e^{-\left(e^{\frac{2(6e^{5x}+9e^{2x}+6e^{x}+1)}{e^{6x}-3e^{4x}+3e^{2x}-1}}-e^{\frac{2e^{3x}(e^{3x}+9e^{x}+4)}{e^{6x}-3e^{4x}+3e^{2x}-1}}\right)}e^{-\frac{2e^{3x}(e^{3x}+9e^{x}+4)}{e^{6x}-3e^{4x}+3e^{2x}-1}}$$

$$\text{"h(x)"},\ \left(6e^{-\frac{2(\sinh(x)-1)^3}{\sinh(x)^3}}e^{-\frac{\sinh(x)^3+\sinh(x)^3-6\sinh(x)^2+6\sinh(x)-2}{\sinh(x)^3}}(-\cosh(x)^2+2\sinh(x))\cosh(x)\right)\Big/\left(\left(-1+e^{-e^{-\frac{2(e^{6x}+9e^{4x}+4e^{3x}-9e^{2x}-6e^{5x}-6e^{x}-1)}{e^{6x}-3e^{4x}+3e^{2x}-1}}}\right)\sinh(x)^4\right)$$

$$\text{"i is"},\ 16,$$

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

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

$$l:=0$$

$$u:=\infty$$

$$Temp:=[[[y\sim$$

$$\rightarrow \frac{1}{y\sim^2 - 1}\left(6\, e^{2\,\mathrm{arctanh}\left(\frac{1}{y\sim}\right)^3 - 6\,\mathrm{arctanh}\left(\frac{1}{y\sim}\right)^2 - e^{2\left(-1+\mathrm{arctanh}\left(\frac{1}{y\sim}\right)\right)^3 + 6\,\mathrm{arctanh}\left(\frac{1}{y\sim}\right) - 1}\left(-1+\mathrm{arctanh}\left(\frac{1}{y\sim}\right)\right)^2}\right), \left[1, \frac{-e-e^{-1}}{-e+e^{-1}}\right], [\text{"Continuous"}, \text{"PDF"}]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\tanh(x+1)}$, "base", $6\, e^{1-e^{2x^3}} e^{2x^3} x^2$, "ExponentialPowerRV(2,3)"

"f(x)",

$$\frac{6\, e^{2\,\mathrm{arctanh}\left(\frac{1}{x}\right)^3 - 6\,\mathrm{arctanh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\mathrm{arctanh}\left(\frac{1}{x}\right)\right)^3 + 6\,\mathrm{arctanh}\left(\frac{1}{x}\right) - 1}\left(-1+\mathrm{arctanh}\left(\frac{1}{x}\right)\right)^2}}{x^2 - 1}$$

"F(x)",

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

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

"S(x)", 1

$$-e^{-\frac{1}{(x-1)^3}\left(e^{-\frac{1}{4}\ln(x-1)^3 - \frac{3}{2}\ln(x+1)^2 - \frac{3}{2}\ln(x-1)^2 + \frac{1}{4}\ln(x+1)^3 - 2}{}_{(x+1)}{}^{\frac{3}{4}}{}_{(}$$

$$-\ln(x+1)+\ln(x-1)+4)\ln(x-1)\Big)_{x^3}$$

$$+3\,e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x+1)}\frac{3}{4}\,(-\ln(x+1)+\ln(x-1)+4)\ln(x}$$

$$-1)\Big)_{x^2}+3\,e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x+1)}\frac{3}{4}\,(-\ln(x+1)+\ln(x}$$

$$-1)+4)\ln(x-1)\Big)_{x}-x^3+e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x+1)}\frac{3}{4}\,(}$$

$$-\ln(x+1)+\ln(x-1)+4)\ln(x-1)\Big)+3x^2-3x+1\Big)$$

$$\text{"h(x)"},\ -\left(6\,e^{2\,\text{arctanh}\left(\frac{1}{x}\right)^3-6\,\text{arctanh}\left(\frac{1}{x}\right)^2-e^{2\left(-1+\text{arctanh}\left(\frac{1}{x}\right)\right)^3+6\,\text{arctanh}\left(\frac{1}{x}\right)-1}\left(-1\right.\right.$$

$$\left.+\text{arctanh}\left(\frac{1}{x}\right)\right)^2\Bigg)\Bigg/\Bigg(\Bigg(\left(x^2-1\right)\Bigg(-1$$

$$+e^{-\frac{1}{(x-1)^3}}\Bigg(e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x-1)}\frac{3}{4}\,(}$$

$$-\ln(x+1)+\ln(x-1)+4)\ln(x+1)\Big)_{x^3}$$

$$+3\,e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x-1)}\frac{3}{4}\,(-\ln(x+1)+\ln(x-1)+4)\ln(x}$$

$$+1)\Big)_{x^2}+3\,e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x-1)}\frac{3}{4}\,(-\ln(x+1)+\ln(x}$$

$$-1)+4)\ln(x+1)\Big)_{x}-x^3+e^{-\frac{1}{4}\ln(x-1)^3-\frac{3}{2}\ln(x+1)^2-\frac{3}{2}\ln(x-1)^2+\frac{1}{4}\ln(x+1)^3-2_{(x-1)}\frac{3}{4}\,(}$$

$$-\ln(x+1)+\ln(x-1)+4)\ln(x+1)\Big)+3x^2-3x+1\Big)\Bigg)\Bigg)$$

$$\text{"mean and variance"}, 6\left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{x\, e^{2\operatorname{arctanh}\left(\frac{1}{x}\right)^3-6\operatorname{arctanh}\left(\frac{1}{x}\right)^2-e^{2\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^3+6\operatorname{arctanh}\left(\frac{1}{x}\right)-1}\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2}}{x^2-1}\,dx\right), 6\left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{1}{x^2-1}\left(x^2\, e^{2\operatorname{arctanh}\left(\frac{1}{x}\right)^3-6\operatorname{arctanh}\left(\frac{1}{x}\right)^2-e^{2\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^3+6\operatorname{arctanh}\left(\frac{1}{x}\right)-1}\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2}\right)dx\right) - 36$$

$$\left(\int_{1}^{\frac{e^2+1}{e^2-1}} \frac{x\, e^{2\operatorname{arctanh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arctanh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arctanh}\left(\frac{1}{x}\right) - 1}\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2}{x^2-1}\, dx \right)^2$$

"MF",

$$\int_{1}^{\frac{-e-e^{-1}}{-e+e^{-1}}} \frac{1}{x^2-1}\left(6\, x^{r\sim}\, e^{2\operatorname{arctanh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arctanh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arctanh}\left(\frac{1}{x}\right) - 1}\left(-1+\operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2}\right) dx$$

$$\text{"MGF"}, 6 \left(\int_1^{\frac{e^2+1}{e^2-1}} \frac{1}{x^2-1} \left(\left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right) \right)^2 e^{t x + 2 \operatorname{arctanh}\left(\frac{1}{x}\right)^3 - 6 \operatorname{arctanh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right)\right)^3 + 6 \operatorname{arctanh}\left(\frac{1}{x}\right) - 1}} \right) dx \right)$$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\frac{-e-e^{-1}}{-e+e^{-1}}$
Resetting high to RV's maximum support value
WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\frac{-e-e^{-1}}{-e+e^{-1}}$
Resetting high to RV's maximum support value


```
6\,{\frac {{{\rm e}^{2\, \left( {\rm arctanh} \left({x}^{-1}
```

```
\right)
 \right) ^{3}-6\, \left( {\rm arctanh} \left({x}^{-1}\right)
\right) ^
{2}-{{\rm e}^{2\, \left( -1+{\rm arctanh} \left({x}^{-1}\right)
 \right) ^{3}}}+6\,{\rm arctanh} \left({x}^{-1}\right)-1}} \left
( -1+
{\rm arctanh} \left({x}^{-1}\right) \right) ^{2}}{{x}^{2}-1}}
"i is", 17,
    " ----------------------------------------------------------------------------------------------------------
    ----------"
```

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{1}{\sqrt{y\sim^2+1}\ |y\sim|} \left(6\, e^{2\,\mathrm{arcsinh}\left(\frac{1}{y\sim}\right)^3 - 6\,\mathrm{arcsinh}\left(\frac{1}{y\sim}\right)^2 - e^{2\left(-1+\mathrm{arcsinh}\left(\frac{1}{y\sim}\right)\right)^3 + 6\,\mathrm{arcsinh}\left(\frac{1}{y\sim}\right) - 1} \left(-1 + \mathrm{arcsinh}\left(\frac{1}{y\sim}\right)\right)^2} \right) \right], \left[0, \frac{2}{e - e^{-1}}\right], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\sinh(x+1)}$, "base", $6\, e^{1-e^{2x^3}} e^{2x^3} x^2$, "ExponentialPowerRV(2,3)"

"f(x)",

$$\frac{6\, e^{2\,\mathrm{arcsinh}\left(\frac{1}{x}\right)^3 - 6\,\mathrm{arcsinh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^3 + 6\,\mathrm{arcsinh}\left(\frac{1}{x}\right) - 1} \left(-1 + \mathrm{arcsinh}\left(\frac{1}{x}\right)\right)^2}}{\sqrt{x^2+1}\ |x|}$$

"F(x)", 6 (

$$\int_0^x \frac{e^{2\operatorname{arcsinh}\left(\frac{1}{t}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{t}\right)^2 - e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{t}\right) - 1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^2}}{\sqrt{t^2+1}\,|t|}\,dt$$

$$\text{"S(x)"},\ 1 - 6\left(\int_0^x \frac{e^{2\operatorname{arcsinh}\left(\frac{1}{t}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{t}\right)^2 - e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{t}\right) - 1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^2}}{\sqrt{t^2+1}\,|t|}\,dt\right)$$

$$\text{"h(x)"},\ -\left(6\,e^{2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{x}\right) - 1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2}\right) \Big/ \left(\sqrt{x^2+1}\,|x|\left(-1+6\left(\right.\right.\right.$$

$$\int_0^x \frac{e^{2\operatorname{arcsinh}\left(\frac{1}{t}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{t}\right)^2 - e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{t}\right) - 1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{t}\right)\right)^2}}{\sqrt{t^2+1}\,|t|}\,dt\Bigg)\Bigg)\Bigg)$$

$$\text{"mean and variance"}, 6\left(\int_0^{\frac{2e}{e^2-1}} \frac{e^{2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2 - e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{x}\right) - 1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2}}{\sqrt{x^2+1}}\,dx\right), 6\left(\right.$$

$$\int_0^{\frac{2e}{e^2-1}} \frac{x\, e^{2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3-6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2-e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3+6\operatorname{arcsinh}\left(\frac{1}{x}\right)-1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2}}{\sqrt{x^2+1}}\,dx$$

$$-36\left(\int_0^{\frac{2e}{e^2-1}} \frac{e^{2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3-6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2-e^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3+6\operatorname{arcsinh}\left(\frac{1}{x}\right)-1}\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2}}{\sqrt{x^2+1}}\right.$$

$$\left. \mathrm{d}x \right)^{2}$$

"MF",

$$\int_{0}^{\frac{2}{\mathrm{e}-\mathrm{e}^{-1}}} \frac{1}{\sqrt{x^2+1}\ |x|} \left(6\, x^{r\sim} \mathrm{e}^{2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2 - \mathrm{e}^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{x}\right) - 1} \left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2} \right) \mathrm{d}x$$

"MGF", 6

$$\int_{0}^{\frac{2\,\mathrm{e}}{\mathrm{e}^2-1}} \frac{1}{\sqrt{x^2+1}\ x} \left(\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^2 \mathrm{e}^{t x + 2\operatorname{arcsinh}\left(\frac{1}{x}\right)^3 - 6\operatorname{arcsinh}\left(\frac{1}{x}\right)^2 - \mathrm{e}^{2\left(-1+\operatorname{arcsinh}\left(\frac{1}{x}\right)\right)^3 + 6\operatorname{arcsinh}\left(\frac{1}{x}\right) - 1}} \right)$$

$$\mathrm{d}x\Bigg)$$

WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\frac{2}{e - e^{-1}}$
Resetting high to RV's maximum support value
WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\frac{2}{e - e^{-1}}$
Resetting high to RV's maximum support value

```
6\,{\frac {{{\rm e}^{2\, \left( {\rm arcsinh} \left({x}^{-1}
\right)
 \right) ^{3}-6\, \left( {\rm arcsinh} \left({x}^{-1}\right)
\right) ^
{2}-{{\rm e}^{2\, \left( -1+{\rm arcsinh} \left({x}^{-1}\right)
 \right) ^{3}}}+6\,{\rm arcsinh} \left({x}^{-1}\right)-1}} \left
( -1+
{\rm arcsinh} \left({x}^{-1}\right) \right) ^{2}}{\sqrt {{x}^{2}
+1}
 \left| x \right| }}
```

"i is", 18,

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

$$g := t \to \frac{1}{\operatorname{arcsinh}(t+1)}$$
$$l := 0$$
$$u := \infty$$

$$Temp := \left[\left[y\sim \to -\frac{1}{y\sim^2}\left(6\,e^{2\sinh\left(\frac{1}{y\sim}\right)^3-6\sinh\left(\frac{1}{y\sim}\right)^2+6\sinh\left(\frac{1}{y\sim}\right)-e^{2\left(-1+\sinh\left(\frac{1}{y\sim}\right)\right)^3-1}}\left(-\cosh\left(\frac{1}{y\sim}\right)^2+2\sinh\left(\frac{1}{y\sim}\right)\right)\cosh\left(\frac{1}{y\sim}\right)\right)\right], \left[0, \frac{1}{\ln\left(1+\sqrt{2}\right)}\right], \text{["Continuous", "PDF"]}\right]$$

"l and u", 0, ∞

"g(x)", $\frac{1}{\operatorname{arcsinh}(x+1)}$, "base", $6\,e^{1-e^{2x^3}}e^{2x^3}x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $-\frac{1}{x^2}\left(6\,e^{2\sinh\left(\frac{1}{x}\right)^3-6\sinh\left(\frac{1}{x}\right)^2+6\sinh\left(\frac{1}{x}\right)}-e^{2\left(-1+\sinh\left(\frac{1}{x}\right)\right)^3}-1\left(-\cosh\left(\frac{1}{x}\right)^2+2\sinh\left(\frac{1}{x}\right)\right)\cosh\left(\frac{1}{x}\right)\right)$

"F(x)", $e^{\left(e^{\frac{1}{4}\left(6e^{\frac{5}{x}}+9e^{\frac{2}{x}}+6e^{\frac{1}{x}}+1\right)e^{-\frac{3}{x}}}-e^{\frac{1}{4}e^{\frac{3}{x}}+\frac{9}{4}e^{\frac{1}{x}}+1}\right)e^{-\frac{1}{4}\left(6e^{\frac{5}{x}}+9e^{\frac{2}{x}}+6e^{\frac{1}{x}}+1\right)e^{-\frac{3}{x}}}}$

ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse
ERROR(IDF): Could not find the appropriate inverse

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

"S(x)", $1-e^{\left(e^{\frac{1}{4}\left(6e^{\frac{5}{x}}+9e^{\frac{2}{x}}+6e^{\frac{1}{x}}+1\right)e^{-\frac{3}{x}}}-e^{\frac{1}{4}e^{\frac{3}{x}}+\frac{9}{4}e^{\frac{1}{x}}+1}\right)e^{-\frac{1}{4}\left(6e^{\frac{5}{x}}+9e^{\frac{2}{x}}+6e^{\frac{1}{x}}+1\right)e^{-\frac{3}{x}}}}$

"h(x)", $-\left(6\,e^{2\sinh\left(\frac{1}{x}\right)^3-6\sinh\left(\frac{1}{x}\right)^2+6\sinh\left(\frac{1}{x}\right)}-e^{2\left(-1+\sinh\left(\frac{1}{x}\right)\right)^3}-1\left(\cosh\left(\frac{1}{x}\right)^2-2\sinh\left(\frac{1}{x}\right)\right)\cosh\left(\frac{1}{x}\right)\right)\Big/\left(x^2\left(-1+e^{1-e^{-\frac{1}{4}\left(-e^{\frac{6}{x}}+6e^{\frac{5}{x}}-9e^{\frac{4}{x}}-4e^{\frac{3}{x}}+9e^{\frac{2}{x}}+6e^{\frac{1}{x}}+1\right)e^{-\frac{3}{x}}}}\right)\right)$

"i is", 19,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\,e^{1-e^{2\operatorname{arccsch}\left(\frac{1}{y\sim-1}\right)^3}+2\operatorname{arccsch}\left(\frac{1}{y\sim-1}\right)^3}\operatorname{arccsch}\left(\frac{1}{y\sim-1}\right)^2}{\sqrt{y\sim^2-2\,y\sim+2}}\right], [1, \infty],\right.$$

$$\left["Continuous", "PDF"]\right]$$

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

$$"g(x)", \frac{1}{\operatorname{csch}(x)} + 1, "base", 6\, e^{1 - e^{2x^3}}\, e^{2x^3}\, x^2, "ExponentialPowerRV(2,3)"$$

$$"f(x)", \frac{6\, e^{1 - e^{2\operatorname{arccsch}\left(\frac{1}{x-1}\right)^3} + 2\operatorname{arccsch}\left(\frac{1}{x-1}\right)^3} \operatorname{arccsch}\left(\frac{1}{x-1}\right)^2}{\sqrt{x^2 - 2x + 2}}$$

$$"F(x)", 6\left(\int_1^x \frac{e^{1 - e^{2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} + 2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} \operatorname{arccsch}\left(\frac{1}{t-1}\right)^2}{\sqrt{t^2 - 2t + 2}}\, dt\right)$$

$$"S(x)", 1 - 6\left(\int_1^x \frac{e^{1 - e^{2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} + 2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} \operatorname{arccsch}\left(\frac{1}{t-1}\right)^2}{\sqrt{t^2 - 2t + 2}}\, dt\right)$$

$$"h(x)",$$

$$-\left(6\, e^{1 - e^{2\operatorname{arccsch}\left(\frac{1}{x-1}\right)^3} + 2\operatorname{arccsch}\left(\frac{1}{x-1}\right)^3} \operatorname{arccsch}\left(\frac{1}{x-1}\right)^2\right) \Bigg/ \left(\sqrt{x^2 - 2x + 2}\left(-1 + 6\left(\int_1^x \frac{e^{1 - e^{2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} + 2\operatorname{arccsch}\left(\frac{1}{t-1}\right)^3} \operatorname{arccsch}\left(\frac{1}{t-1}\right)^2}{\sqrt{t^2 - 2t + 2}}\, dt\right)\right)\right)$$

"mean and variance", $\int_1^\infty \frac{6\,x\,e^{1-e^{2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3}\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}{\sqrt{x^2-2\,x+2}}\,dx$,

$\int_1^\infty \frac{6\,x^2\,e^{1-e^{2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3}\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}{\sqrt{x^2-2\,x+2}}\,dx$

$-\left(\int_1^\infty \frac{6\,x\,e^{1-e^{2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3}\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}{\sqrt{x^2-2\,x+2}}\,dx\right)^2$

"MF", $\int_1^\infty \frac{6\,x^{r\sim}\,e^{1-e^{2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3}\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2}{\sqrt{x^2-2\,x+2}}\,dx$

"MGF", $\int_1^\infty \frac{6\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^2\,e^{t\,x+1-e^{2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3+2\,\mathrm{arccsch}\left(\frac{1}{x-1}\right)^3}}{\sqrt{x^2-2\,x+2}}\,dx$

WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value
WARNING(PlotDist): Low value provided by user, 0
is less than minimum support value of random variable
1
Resetting low to RV's minimum support value

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

```
{2}}{\sqrt {{x}^{2}-2\,x+2}}}
```

"i is", 20,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to -\frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(y\sim)^3}}\operatorname{arctanh}(y\sim)^3-\operatorname{arctanh}(y\sim)^3-2}{\operatorname{arctanh}(y\sim)^3}}}{\operatorname{arctanh}(y\sim)^4\left(y\sim^2-1\right)}\right], [0, 1], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\tanh\left(\frac{1}{x}\right)$, "base", $6\,e^{1-e^{2x^3}}e^{2x^3}x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $-\frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}$

"F(x)", $-6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(t)^3}}\operatorname{arctanh}(t)^3-\operatorname{arctanh}(t)^3-2}{\operatorname{arctanh}(t)^3}}}{\operatorname{arctanh}(t)^4\left(t^2-1\right)}\,dt\right)$

"S(x)", $1+6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(t)^3}}\operatorname{arctanh}(t)^3-\operatorname{arctanh}(t)^3-2}{\operatorname{arctanh}(t)^3}}}{\operatorname{arctanh}(t)^4\left(t^2-1\right)}\,dt\right)$

"h(x)", $-\frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)\left(1+6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(t)^3}}\operatorname{arctanh}(t)^3-\operatorname{arctanh}(t)^3-2}{\operatorname{arctanh}(t)^3}}}{\operatorname{arctanh}(t)^4\left(t^2-1\right)}\,dt\right)\right)}$

"mean and variance", $-6\left(\int_0^1 \frac{x\, e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}\,dx\right), -6\left(\int_0^1 \frac{x^2\, e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}\,dx\right)$

$-36\left(\int_0^1 \frac{x\, e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}\,dx\right)^2$

"MF", $\int_0^1 \left(-\frac{6\, x^{r\sim}\, e^{-\frac{e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}\right)dx$

"MGF", $-6\left(\int_0^1 \frac{e^{-\frac{-t\,x\operatorname{arctanh}(x)^3+e^{\frac{2}{\operatorname{arctanh}(x)^3}}\operatorname{arctanh}(x)^3-\operatorname{arctanh}(x)^3-2}{\operatorname{arctanh}(x)^3}}}{\operatorname{arctanh}(x)^4\left(x^2-1\right)}\,dx\right)$

WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable*, 1

Resetting high to RV's maximum support value

```
-6\,{\frac {1}{ \left( {\rm arctanh} \left(x\right) \right) ^{4}
 \left( {x}^{2}-1 \right) }{{\rm e}^{-{\frac {1}{ \left( {\rm
arctanh}
 \left(x\right) \right) ^{3}} \left( {{\rm e}^{2\, \left(
{\rm arctanh} \left(x\right) \right) ^{-3}}} \left( {\rm
arctanh}
\left(x\right) \right) ^{3}- \left( {\rm arctanh} \left(x\right)
 \right) ^{3}-2 \right) }}}}
```

"i is", 21,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(y\sim)^3}}\operatorname{arccsch}(y\sim)^3 - \operatorname{arccsch}(y\sim)^3 - 2}{\operatorname{arccsch}(y\sim)^3}}}{\sqrt{y\sim^2 + 1}\,\operatorname{arccsch}(y\sim)^4\,|y\sim|}\right], [0, \infty], ["Continuous", "PDF"]\right]$$

"l and u", 0, ∞

"g(x)", $\operatorname{csch}\left(\frac{1}{x}\right)$, "base", $6\,e^{1-e^{2x^3}}e^{2x^3}x^2$, "ExponentialPowerRV(2,3)"

"f(x)", $\frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(x)^3}}\operatorname{arccsch}(x)^3 - \operatorname{arccsch}(x)^3 - 2}{\operatorname{arccsch}(x)^3}}}{\sqrt{x^2+1}\,\operatorname{arccsch}(x)^4\,|x|}$

"F(x)", $6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(t)^3}}\operatorname{arccsch}(t)^3 - \operatorname{arccsch}(t)^3 - 2}{\operatorname{arccsch}(t)^3}}}{\sqrt{t^2+1}\,\operatorname{arccsch}(t)^4\,|t|}\,dt\right)$

"S(x)", $1 - 6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(t)^3}}\operatorname{arccsch}(t)^3 - \operatorname{arccsch}(t)^3 - 2}{\operatorname{arccsch}(t)^3}}}{\sqrt{t^2+1}\,\operatorname{arccsch}(t)^4\,|t|}\,dt\right)$

"h(x)", $-\frac{6\,e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(x)^3}}\operatorname{arccsch}(x)^3 - \operatorname{arccsch}(x)^3 - 2}{\operatorname{arccsch}(x)^3}}}{\sqrt{x^2+1}\,\operatorname{arccsch}(x)^4\,|x|\left(-1 + 6\left(\int_0^x \frac{e^{-\frac{e^{\frac{2}{\operatorname{arccsch}(t)^3}}\operatorname{arccsch}(t)^3 - \operatorname{arccsch}(t)^3 - 2}{\operatorname{arccsch}(t)^3}}}{\sqrt{t^2+1}\,\operatorname{arccsch}(t)^4\,|t|}\,dt\right)\right)}$

"i is", 22,

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

$$g := t \to \operatorname{arccsch}\left(\frac{1}{t}\right)$$

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 6\, e^{1-e^{2\sinh(y\sim)^3}+2\sinh(y\sim)^3}\cosh(y\sim)\sinh(y\sim)^2\right],\ [0,\infty],\ [\text{"Continuous"},\ \text{"PDF"}]\right]$$

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

$$\text{"g(x)"},\ \operatorname{arccsch}\left(\frac{1}{x}\right),\ \text{"base"},\ 6\, e^{1-e^{2x^3}}e^{2x^3}x^2,\ \text{"ExponentialPowerRV(2,3)"}$$

$$\text{"f(x)"},\ 6\, e^{1-e^{2\sinh(x)^3}+2\sinh(x)^3}\cosh(x)\sinh(x)^2$$

$$\text{"F(x)"},\ \left(e^{e^{\frac{1}{4}(e^{6x}-3e^{4x}+3e^{2x}-1)e^{-3x}}}-e\right)e^{-e^{\frac{1}{4}(e^{6x}-3e^{4x}+3e^{2x}-1)e^{-3x}}}$$

$$\text{"IDF(x)"},\ \left[\left[\ln@\left(s\to RootOf\left(\_Z^6-3\,\_Z^4-4\ln\left(\ln\left(-\frac{1}{s-1}\right)+1\right)\_Z^3+3\,\_Z^2-1\right)\right)\right],\ [0,1],\ [\text{"Continuous"},\ \text{"IDF"}]\right]$$

$$\text{"S(x)"},\ e^{-e^{\frac{1}{4}(e^{6x}-3e^{4x}+3e^{2x}-1)e^{-3x}}}+1$$

$$\text{"h(x)"},\ 6\, e^{-e^{2\sinh(x)^3}+2\sinh(x)^3+e^{\frac{1}{4}(e^{6x}-3e^{4x}+3e^{2x}-1)e^{-3x}}}\sinh(x)^2\cosh(x)$$

$$\text{"mean and variance"},\ \int_0^\infty 6\, e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x\,dx,$$

$$\int_0^\infty 6\, e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x^2\,dx$$

$$-\left(\int_0^\infty 6\, e^{1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,x\,dx\right)^2$$

$$\text{"MF"},\ \int_0^\infty 6\,x^{r\sim}\, e^{1-e^{2\sinh(x)^3}+2\sinh(x)^3}\cosh(x)\sinh(x)^2\,dx$$

$$\text{"MGF"},\ \int_0^\infty 6\, e^{tx+1-e^{2\sinh(x)^3}+\frac{1}{2}\sinh(3x)-\frac{3}{2}\sinh(x)}\sinh(x)^2\cosh(x)\,dx$$

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