

```
> 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, $n \geq r$

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 := WeibullRV(1,2);
bfname := "WeibullRV(1,2)";
      bf := [[x→2 x e-x2], [0, ∞], ["Continuous", "PDF"]]
      bfname := "WeibullRV(1,2)"

```

(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)

```

(2)

```

> # discarded -ln(t + 1), t->csch(t),t->arccsch(t),t -> tan(t),
> 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)):

for i from 1 to 22(glist) do
  print( "i is", i, " -----"
  -----" );
  g := glist[i]:
  l := bf[2][1];
  u := bf[2][2];
  Temp := Transform(bf, [[unapply(g(x), x)], [1,u]]);

  #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));
#print("IDF(x)", IDF(Temp));
#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));
od;

```

$$2 x e^{-x^2}$$

"i is", 1,

"-----"

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

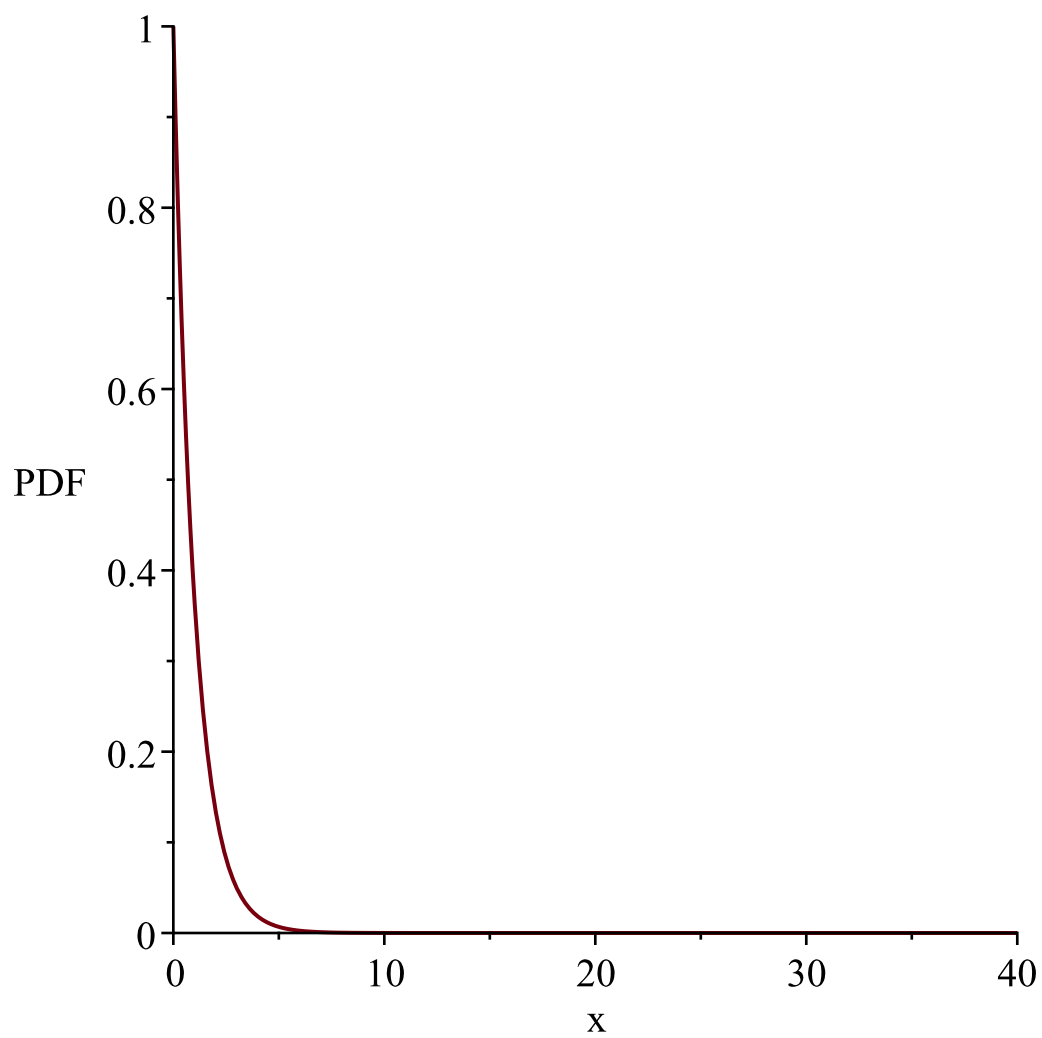
$$l := 0$$

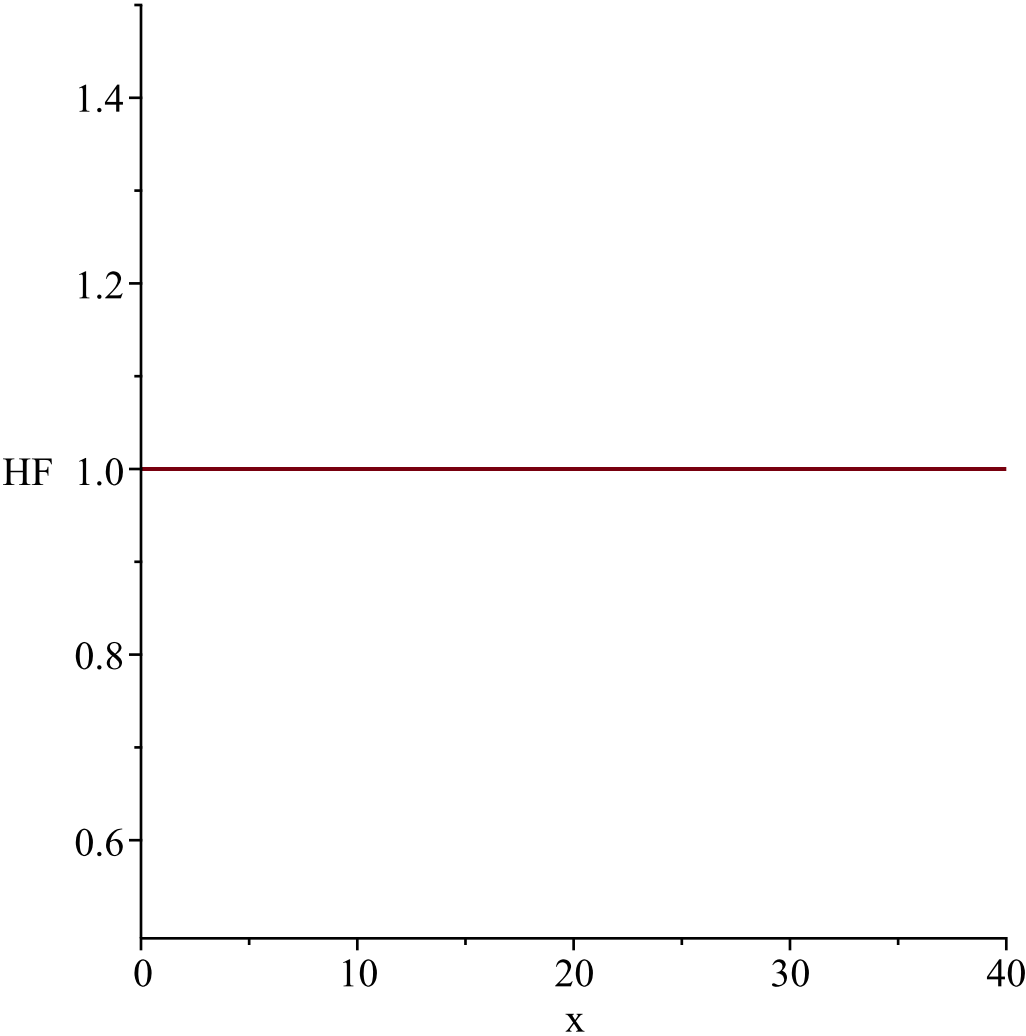
$$u := \infty$$

$$Temp := [[y \sim e^{-y}], [0, \infty], ["Continuous", "PDF"]]$$

$$f(x), e^{-x}$$

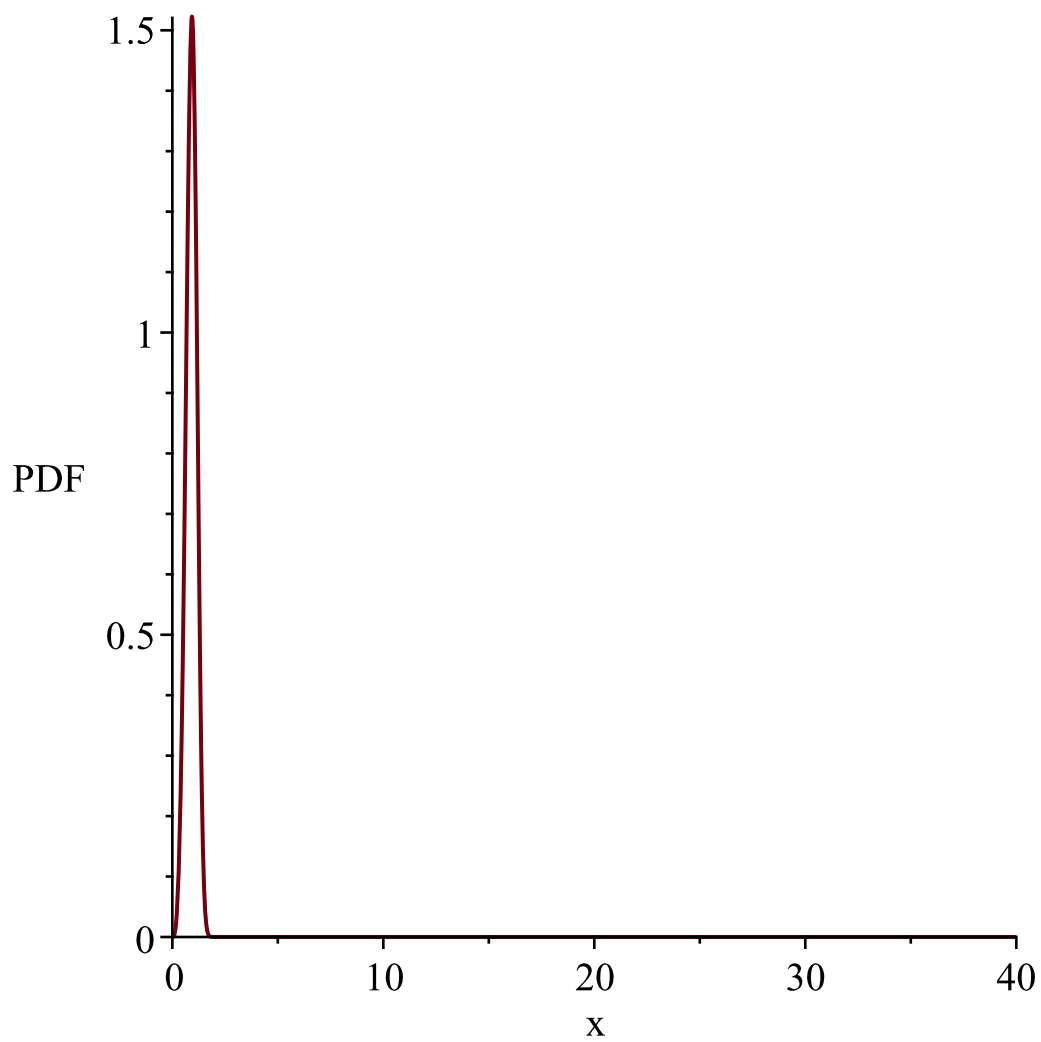
$$h(x), 1$$

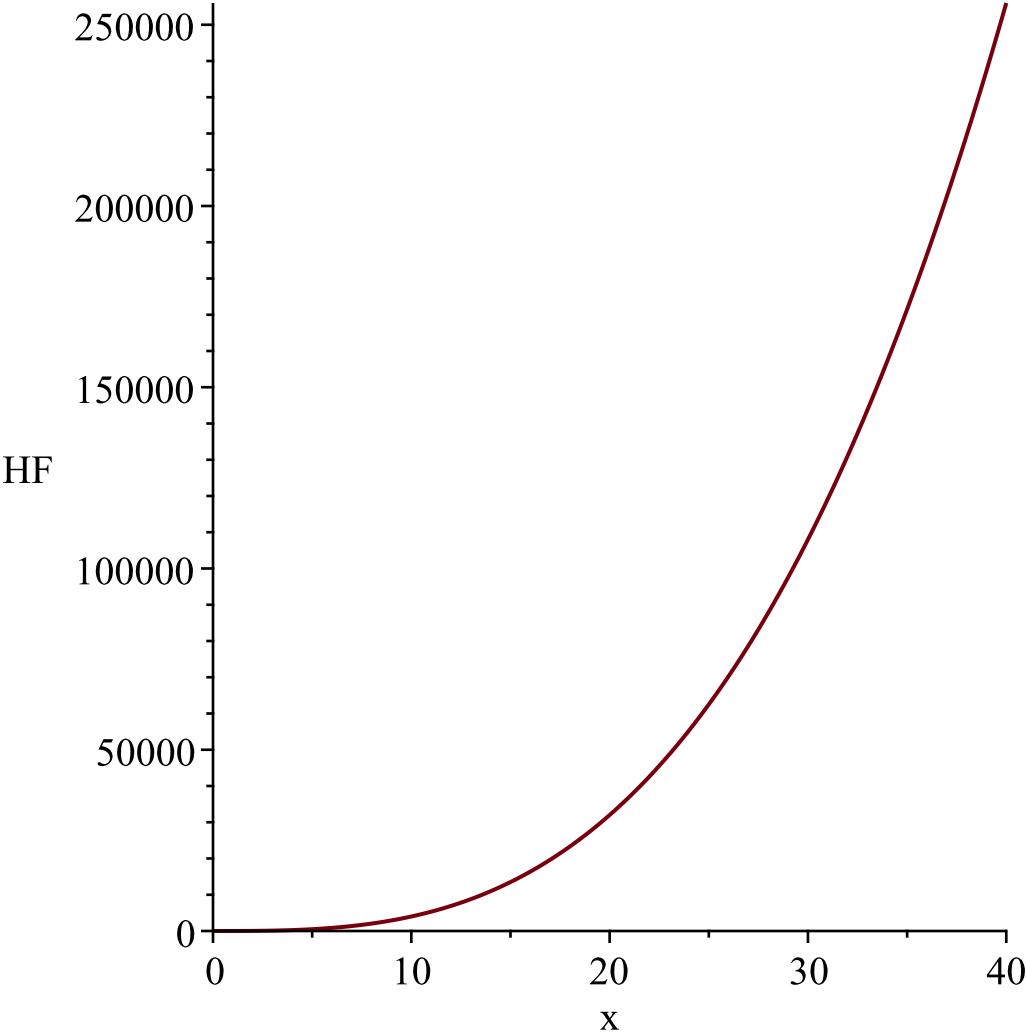




```
{{\rm e}^{-x}}
"i is", 2,
" _____
-----"
```

$$\begin{aligned} g &:= t \rightarrow \sqrt{t} \\ l &:= 0 \\ u &:= \infty \\ Temp &:= \left[\left[y \leadsto 4\,y^3\,\mathrm{e}^{-y^4} \right], \left[0, \infty \right], \left[\text{"Continuous", "PDF"} \right] \right] \\ "f(x)" &, 4\,x^3\,\mathrm{e}^{-x^4} \\ "h(x)" &, 4\,x^3 \end{aligned}$$





$4\backslash,\{x\}^{\{3\}}\{\{\backslashrm e\}^{\{-\{x\}^{\{4\}}\}}\}$
"i is", 3,
" _____"
"_____"

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

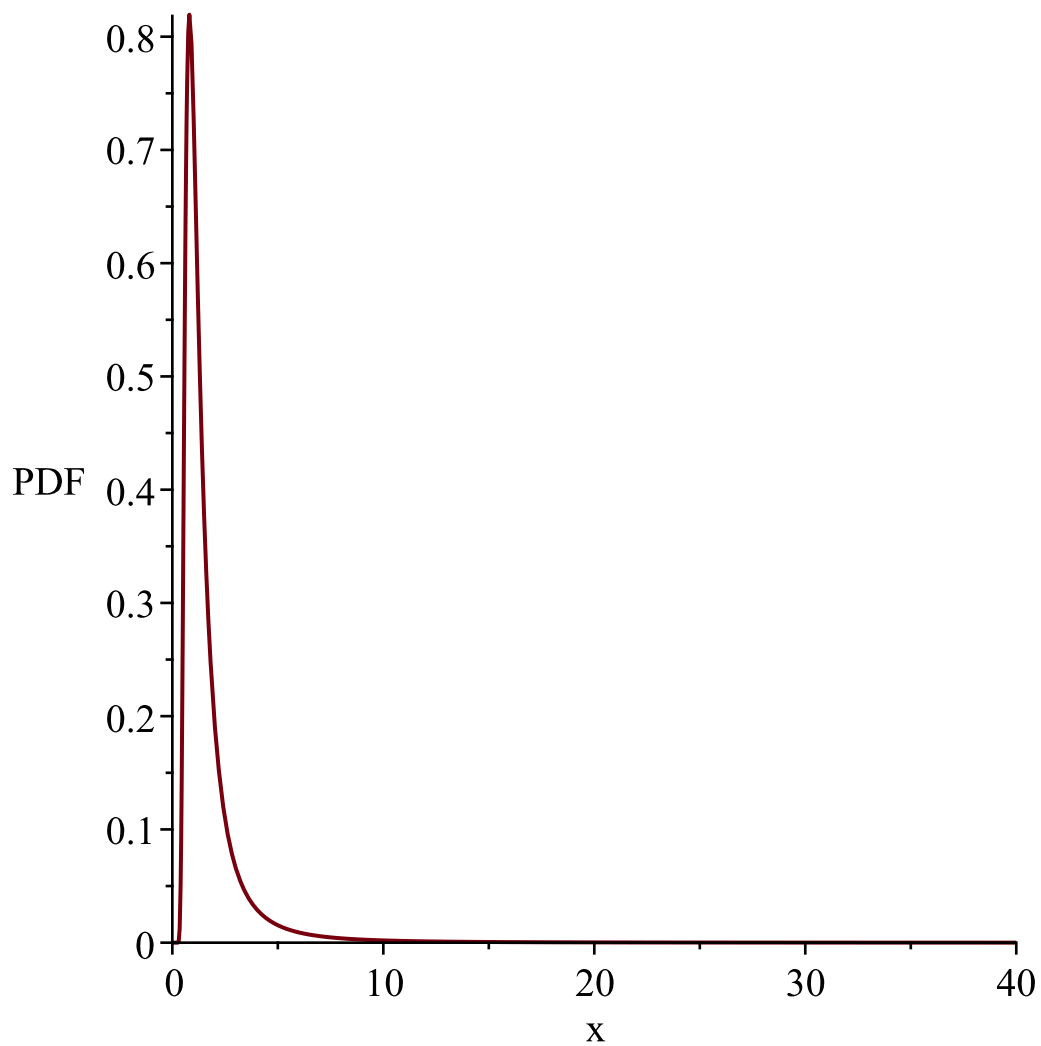
$$l:=0$$

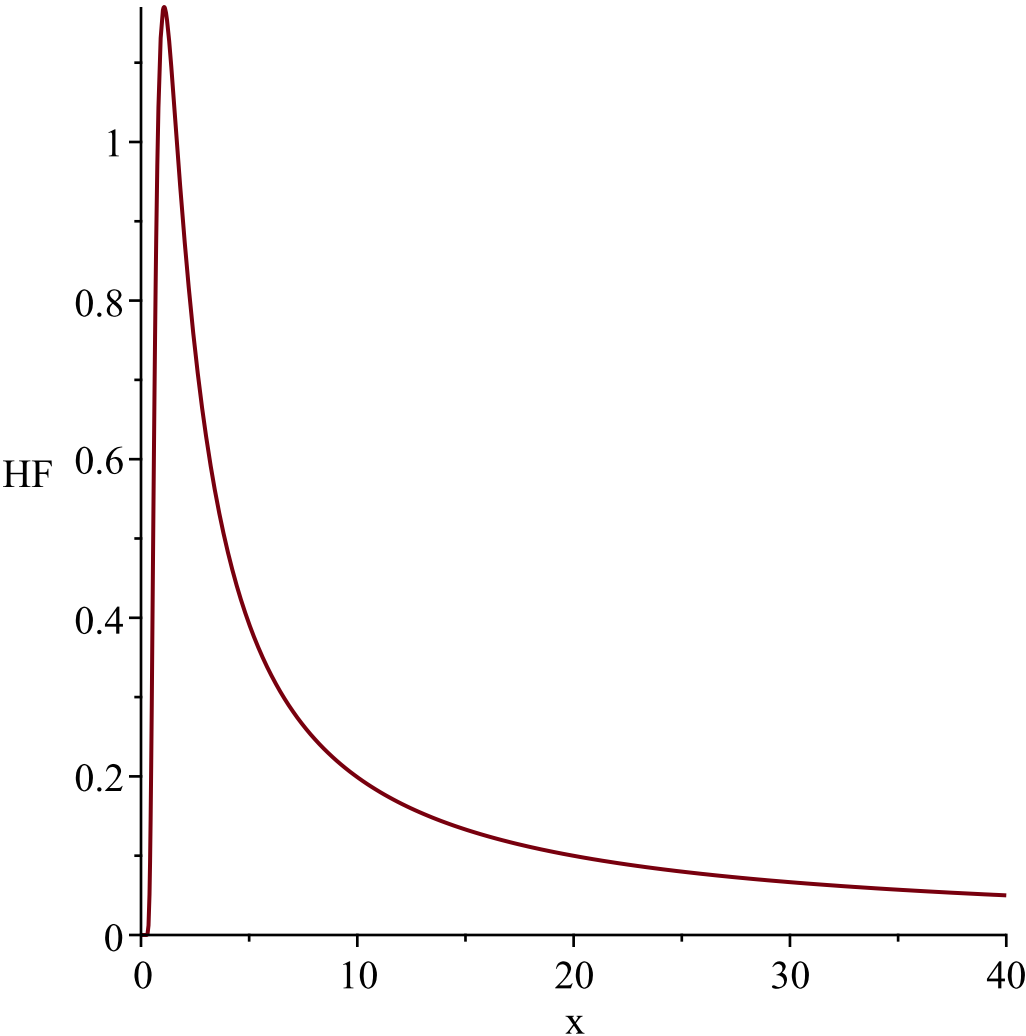
$$u:=\infty$$

$$Temp:=\left[\left[y\leadsto\frac{2\,\mathrm{e}^{-\frac{1}{y^2}}}{y^3}\right],[0,\infty],[\text{"Continuous"},\text{"PDF"}]\right]$$

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

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



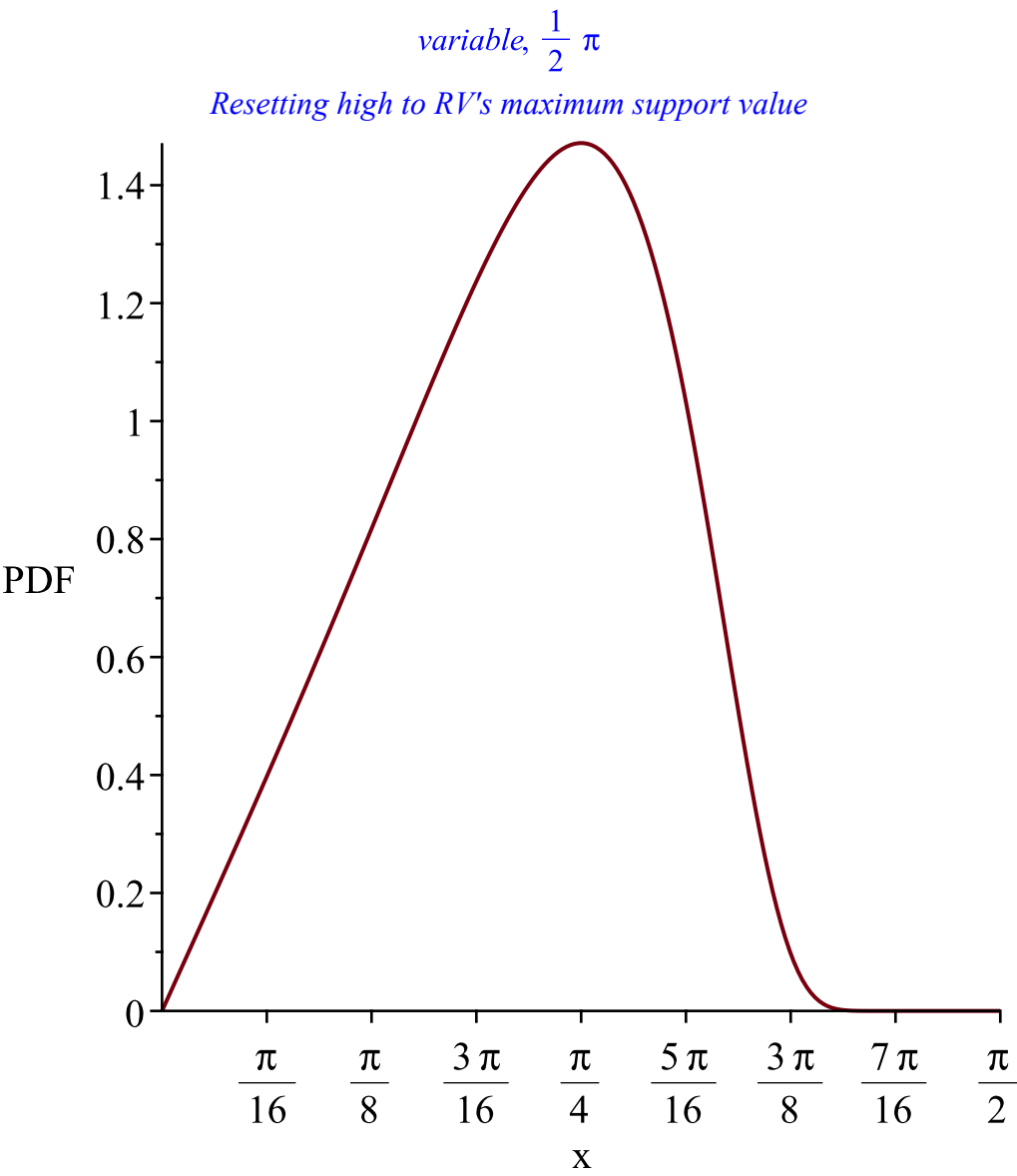


```
2\,{\frac {1}{{x}^{3}}}{\rm e}^{-{x}^{-2}}}\n"i is",4,\n\n-----"
```

$$g:=t\rightarrow \arctan(t)$$
$$l:=0$$
$$u:=\infty$$

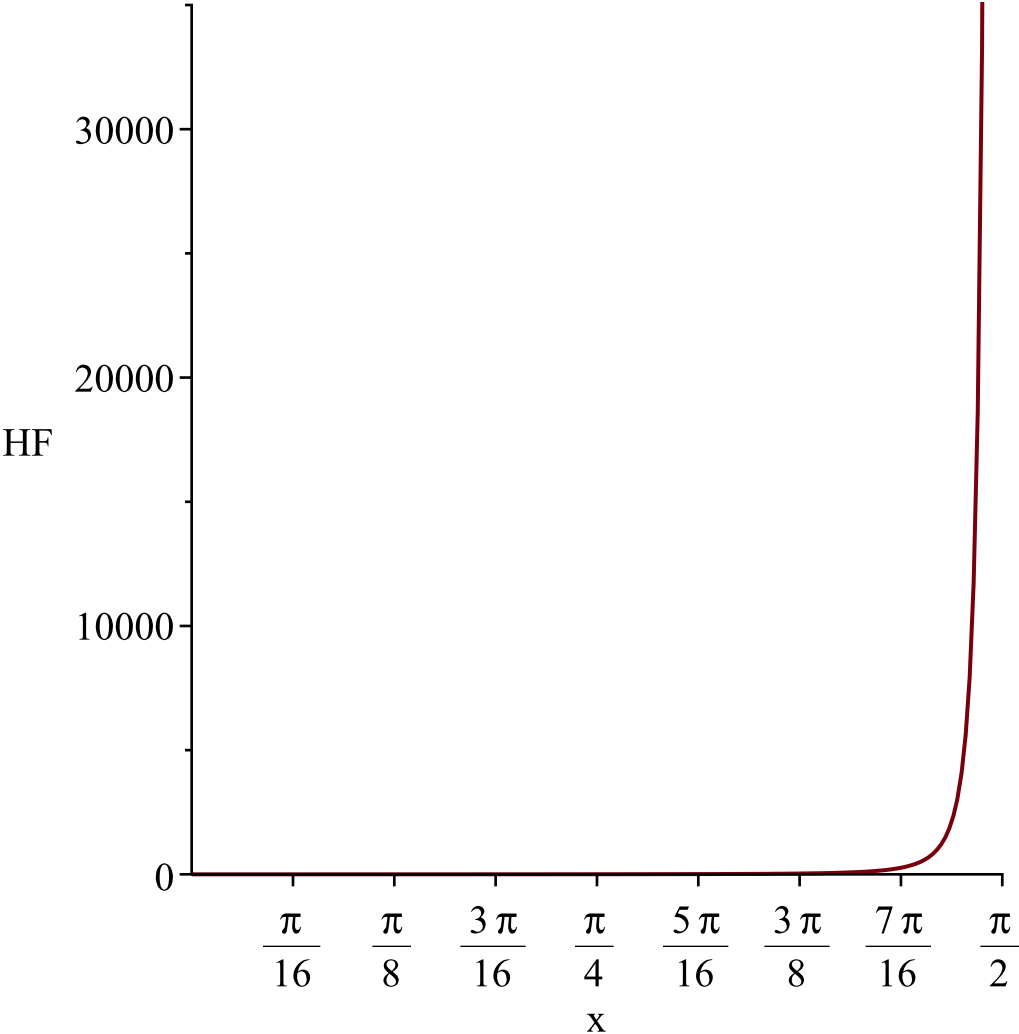
$$Temp:=\left[\left[y\sim\rightarrow\frac{2\sin(y\sim)e^{-\frac{\sin(y\sim)^2}{\cos(y\sim)^2}}}{\cos(y\sim)^3}\right],\left[0,\frac{1}{2}\pi\right],["Continuous","PDF"]\right]$$
$$"f(x)",\frac{2\sin(x)e^{-\frac{\sin(x)^2}{\cos(x)^2}}}{\cos(x)^3}$$
$$"h(x)",\frac{2\sin(x)}{\cos(x)^3}$$

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



*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



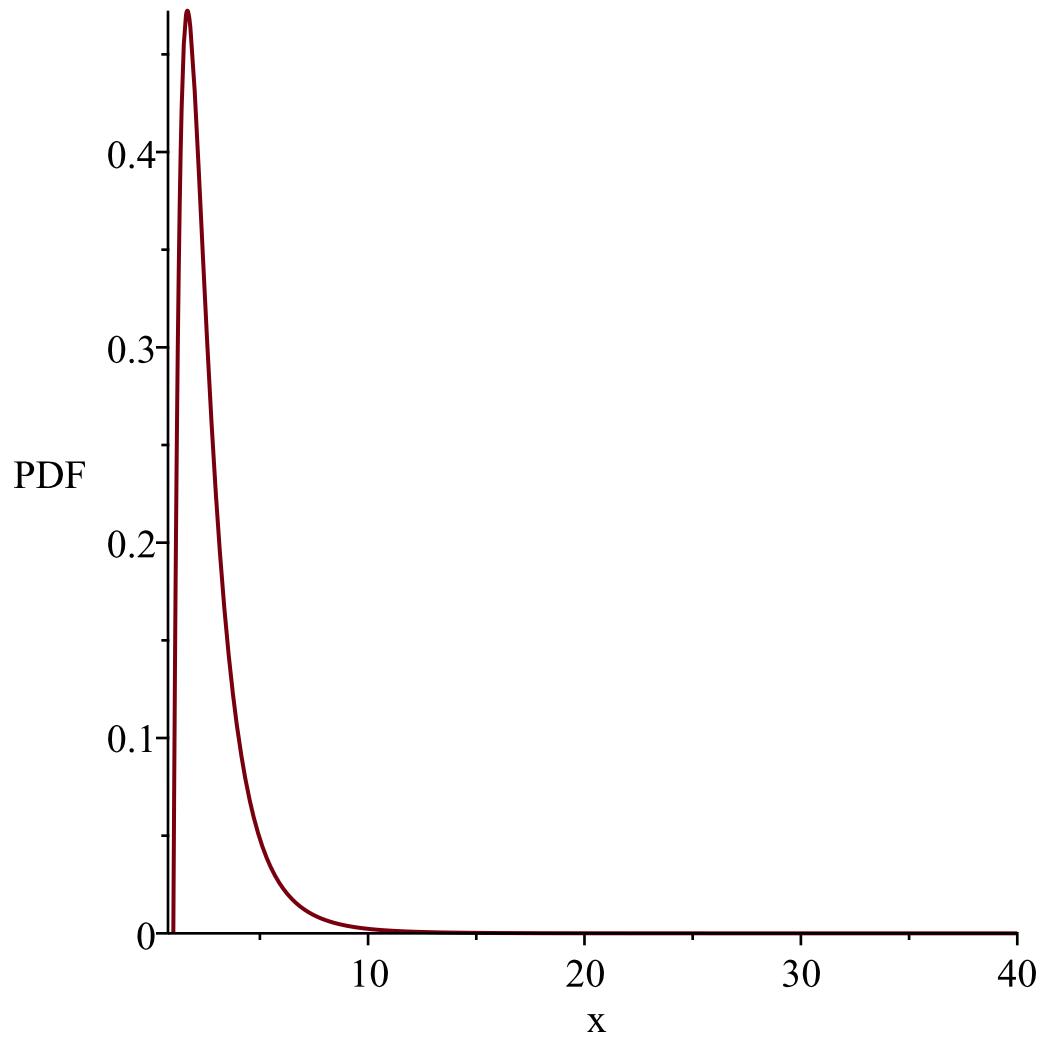
```
2\,{\frac {\sin \left( x \right) }{\left( \cos \left( x \right)
\right) ^{3}}}{\rm e}^{-{\frac {\left( \sin \left( x \right)
\right) ^{2}}{\left( \cos \left( x \right) \right) ^{2}}}}
"i is", 5,
" -----
-----"
```

$$\begin{aligned} g &:= t \rightarrow e^t \\ l &:= 0 \\ u &:= \infty \\ Temp &:= \left[\left[y \rightarrow \frac{2 \ln(y) e^{-\ln(y)^2}}{y}, [1, \infty], ["Continuous", "PDF"] \right] \right. \\ &\quad \left. "f(x)", \frac{2 \ln(x) e^{-\ln(x)^2}}{x} \right. \\ &\quad \left. "h(x)", \frac{2 \ln(x)}{x} \right] \end{aligned}$$

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

1

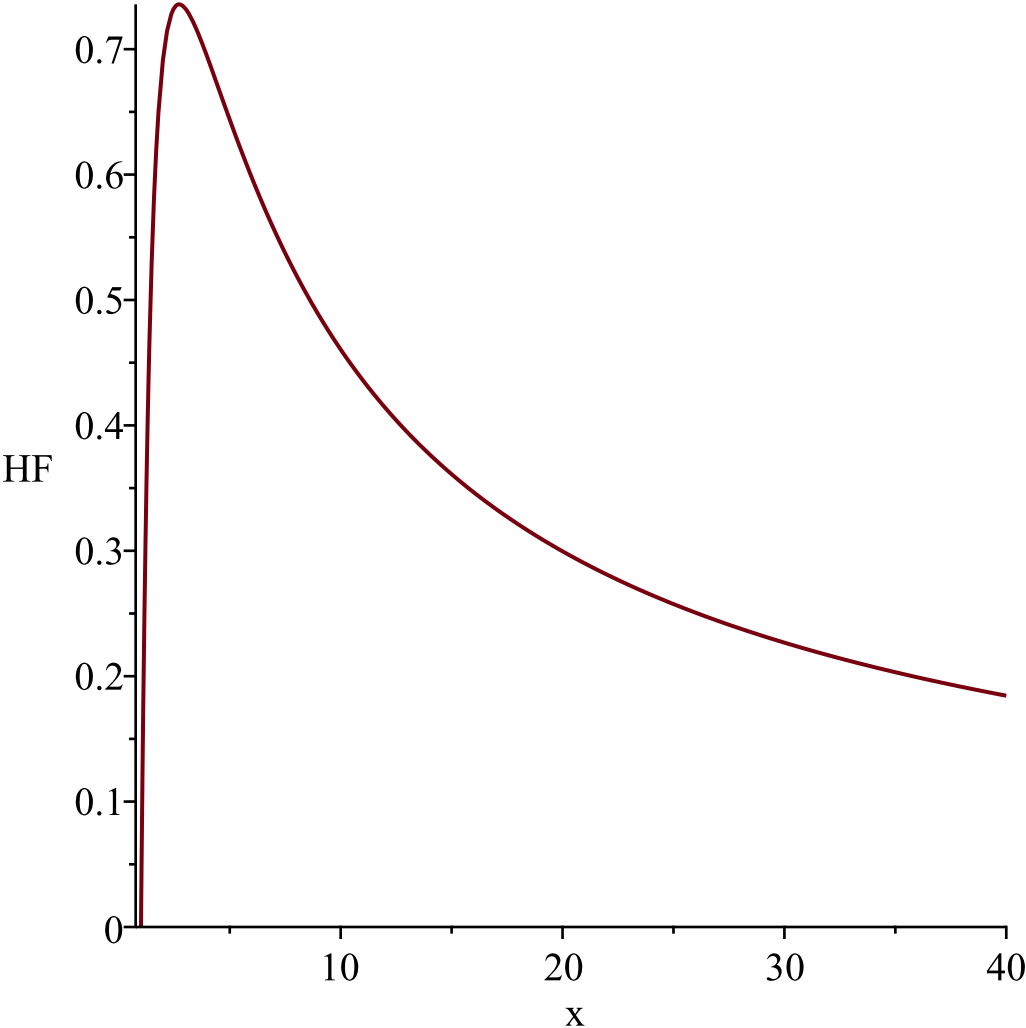
Resetting low to RV's minimum support value



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

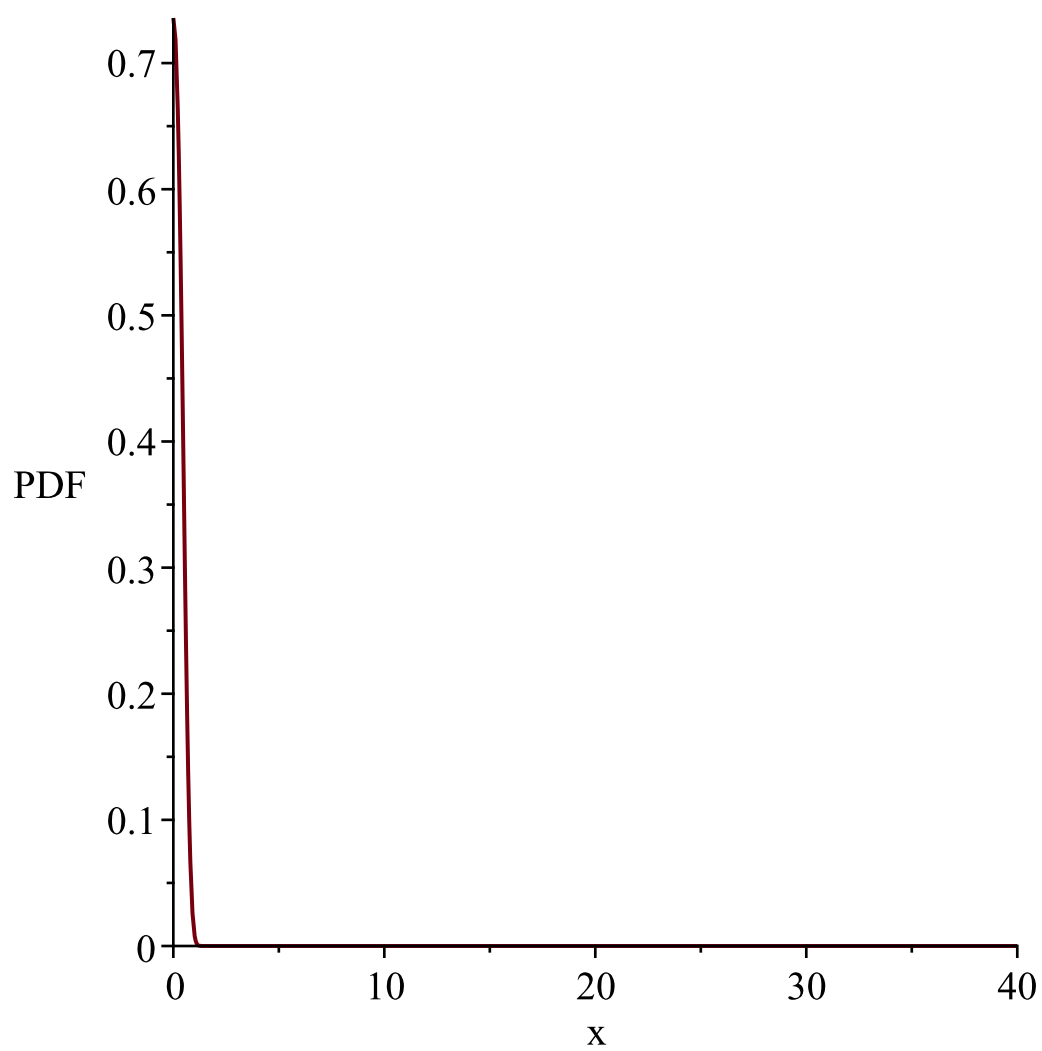
1

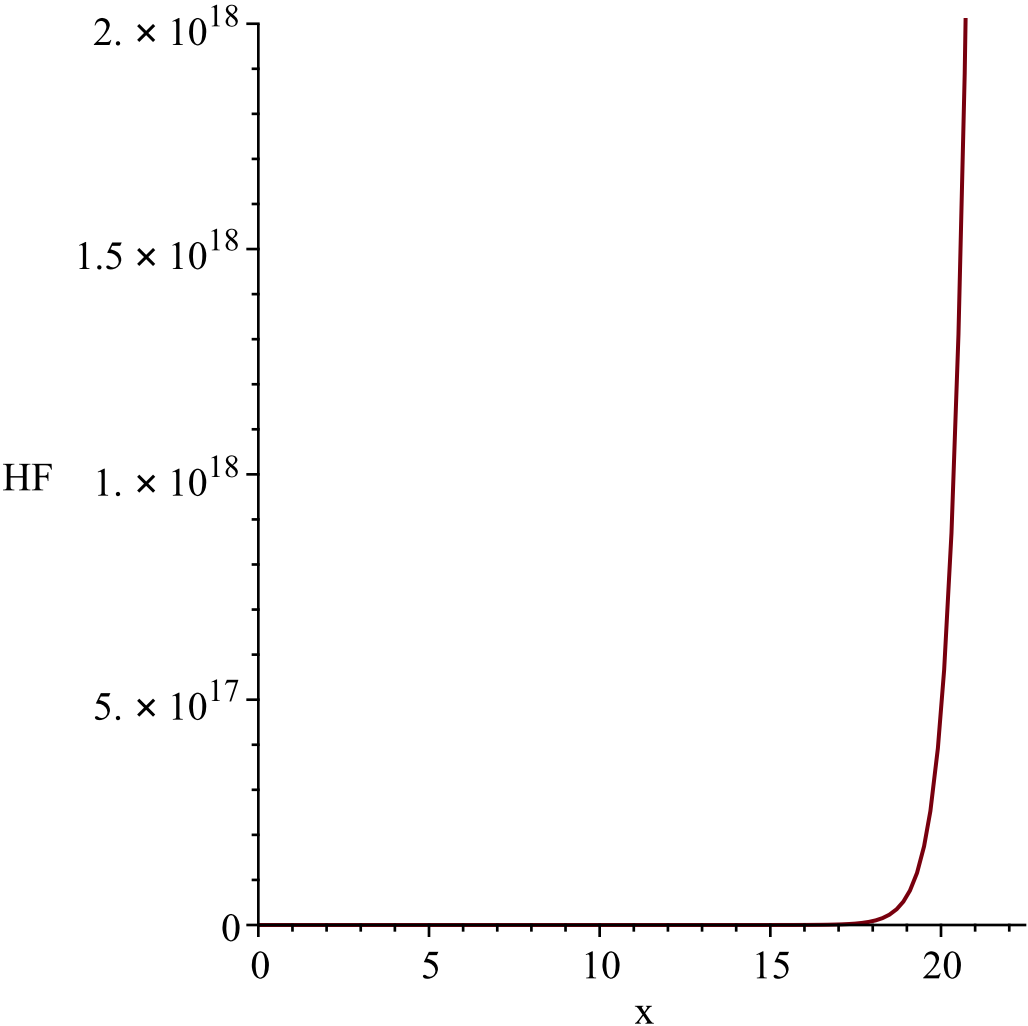
Resetting low to RV's minimum support value



```
2\,{\frac {\ln \left( x \right) {\rm e}^{\left( \ln \left( x \right) \right)^2}}{x}}
"i is", 6,
" _____"
"-----"
```

```
g := t→ln(t)
l := 0
u := ∞
Temp := [[y~→2 e^{2y~ - e^{2y~}}, [- ∞, ∞], ["Continuous", "PDF"]]
"f(x)", 2 e^{2x - e^{2x}}
"h(x)", 2 e^{2x}
```



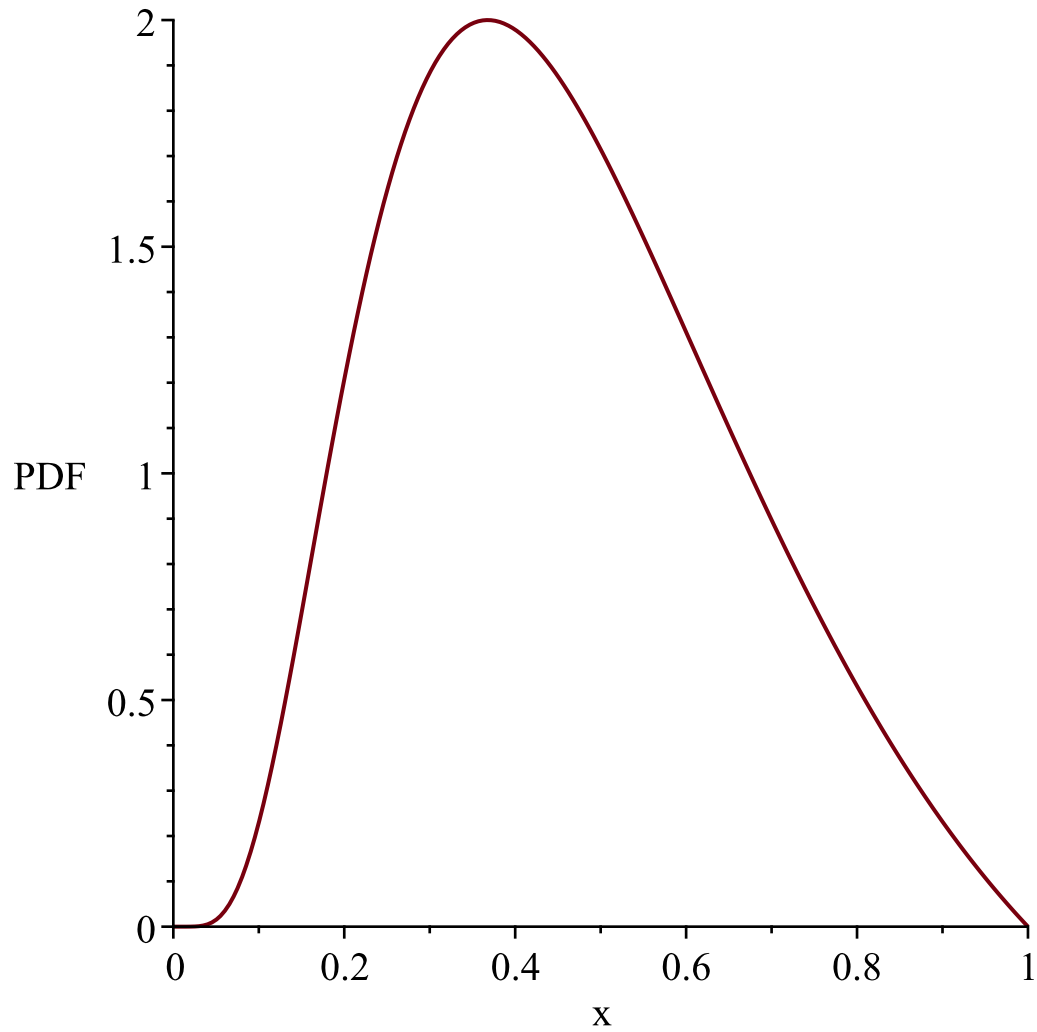


```
2\,{\rm e}^{2\,x-{\rm e}^{2\,x}}
"i is", 7,
"
-----"
-----"
```

$$\begin{aligned} g &:= t \rightarrow e^{-t} \\ l &:= 0 \\ u &:= \infty \\ Temp &:= \left[\left[y \sim -\frac{2 \ln(y) e^{-\ln(y)^2}}{y} \right], [0, 1], ["Continuous", "PDF"] \right] \\ "f(x)", &-\frac{2 \ln(x) e^{-\ln(x)^2}}{x} \\ "h(x)", &\frac{2 \ln(x) e^{-\ln(x)^2}}{x \left(-1 + e^{-\ln(x)^2} \right)} \end{aligned}$$

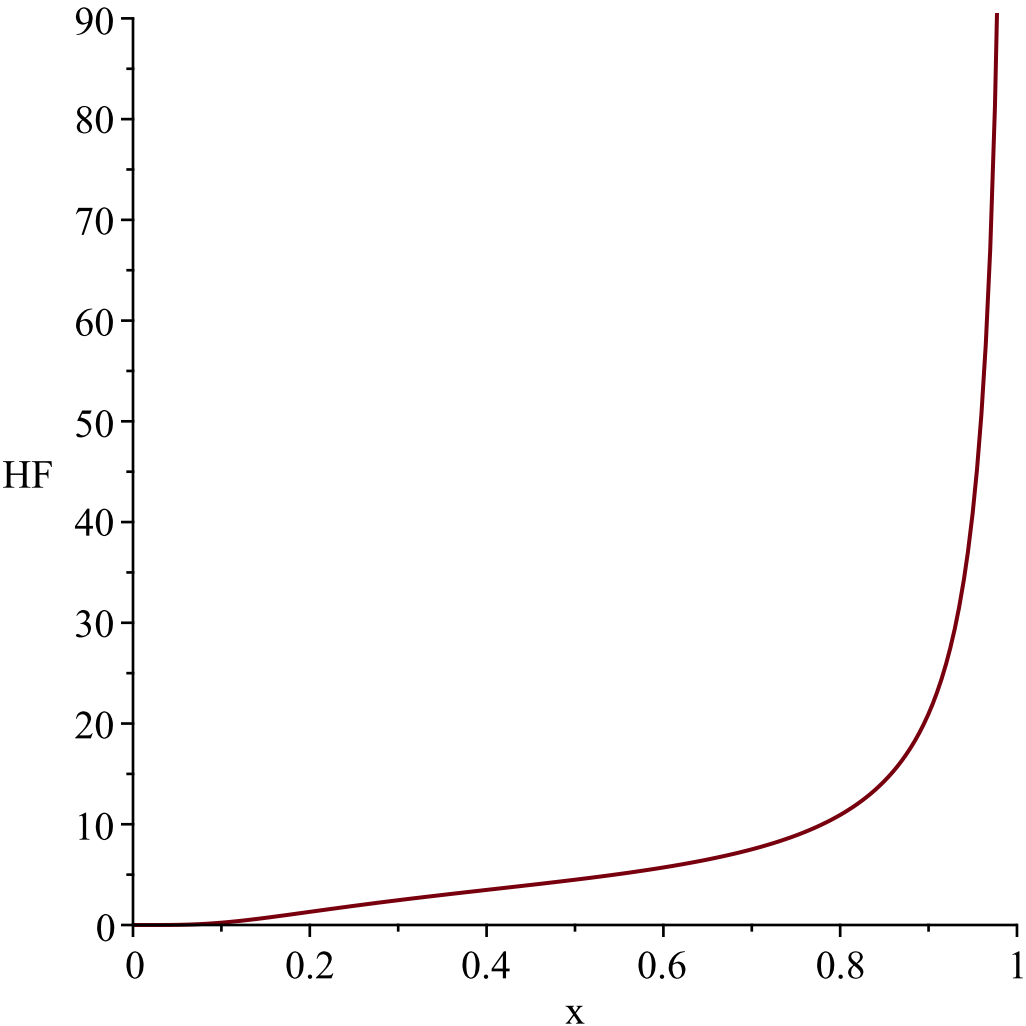
WARNING(PlotDist): High value provided by user, 40 is greater than maximum support value of the random variable, 1

Resetting high to RV's maximum support value



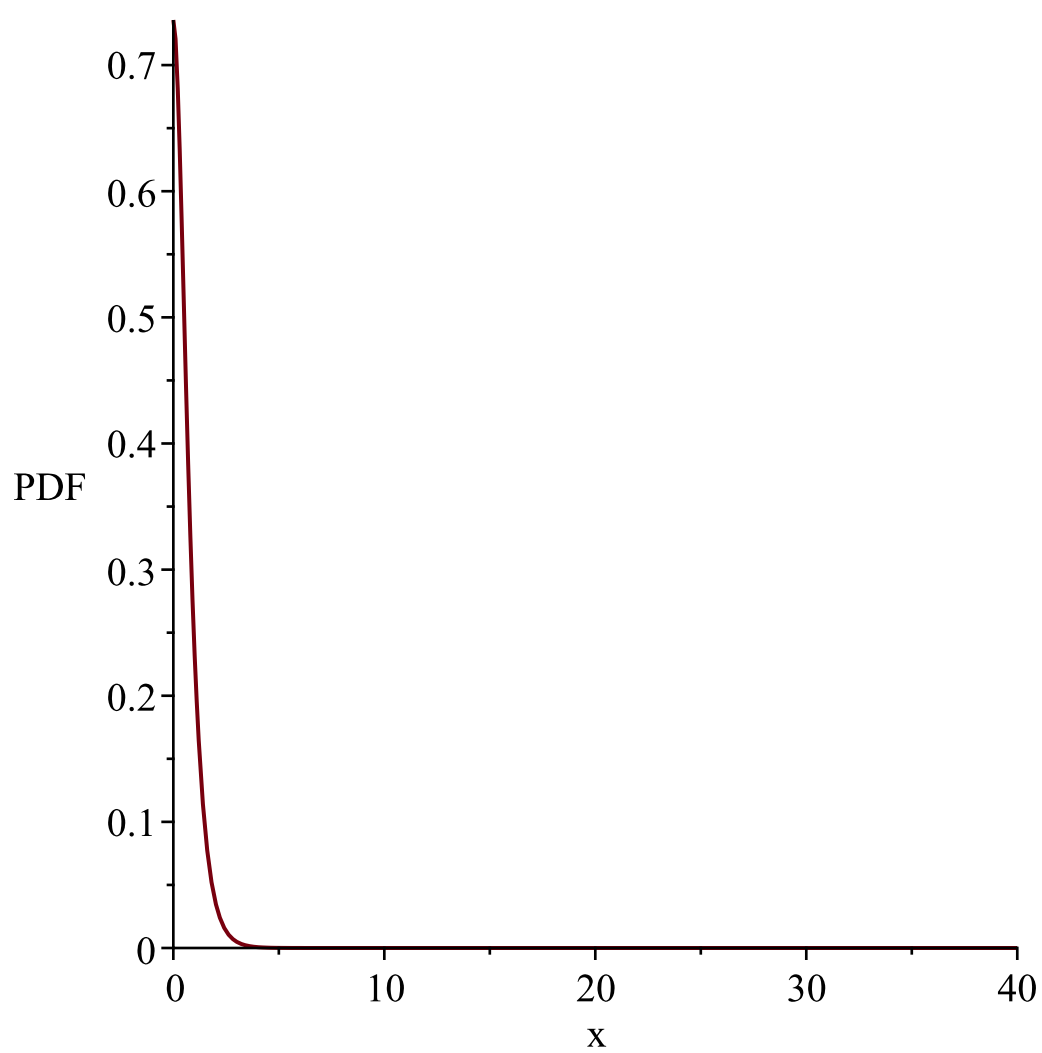
*WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, 1*

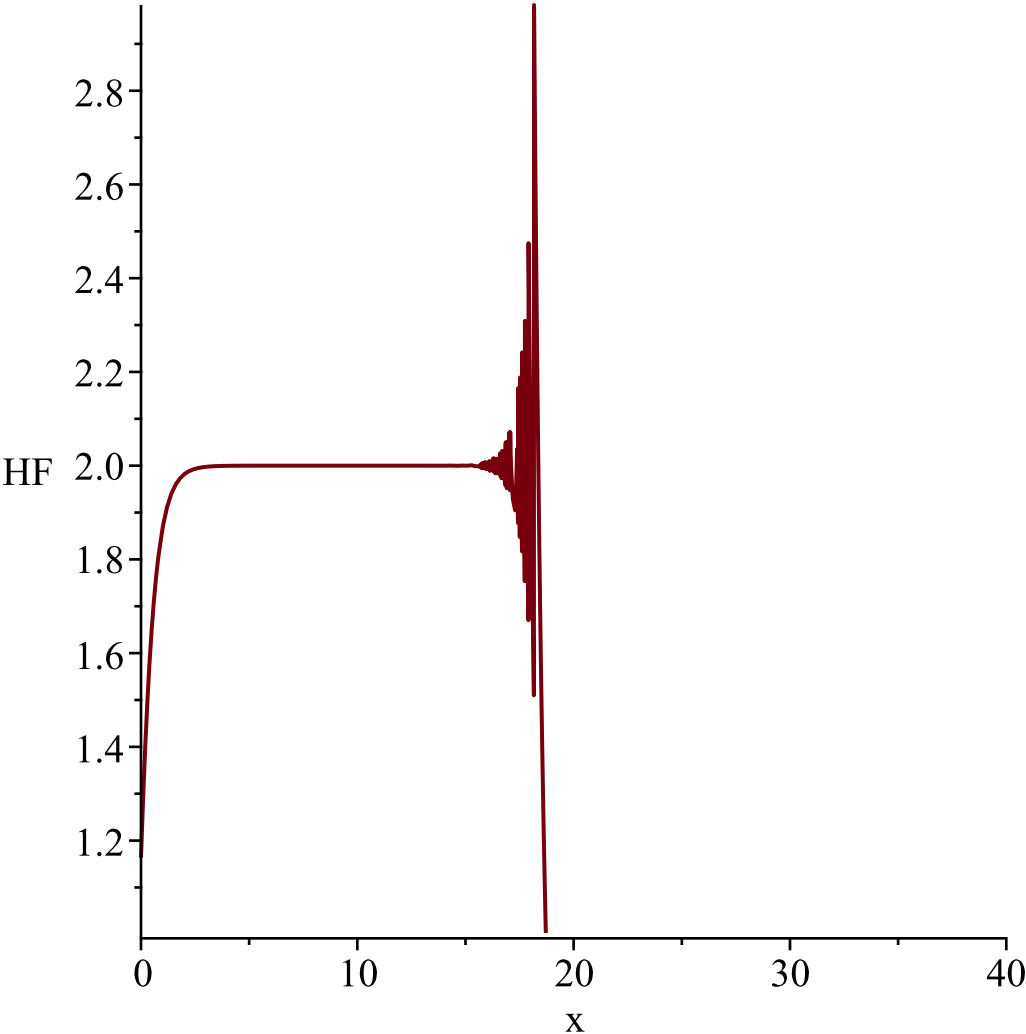
Resetting high to RV's maximum support value



```
-2\,{\frac {\ln \left( x \right) {{\rm e}^{- \left( \ln \left( x \right) \right) ^{2}}}}{x}}
"i is", 8,
" _____"
"-----"
```

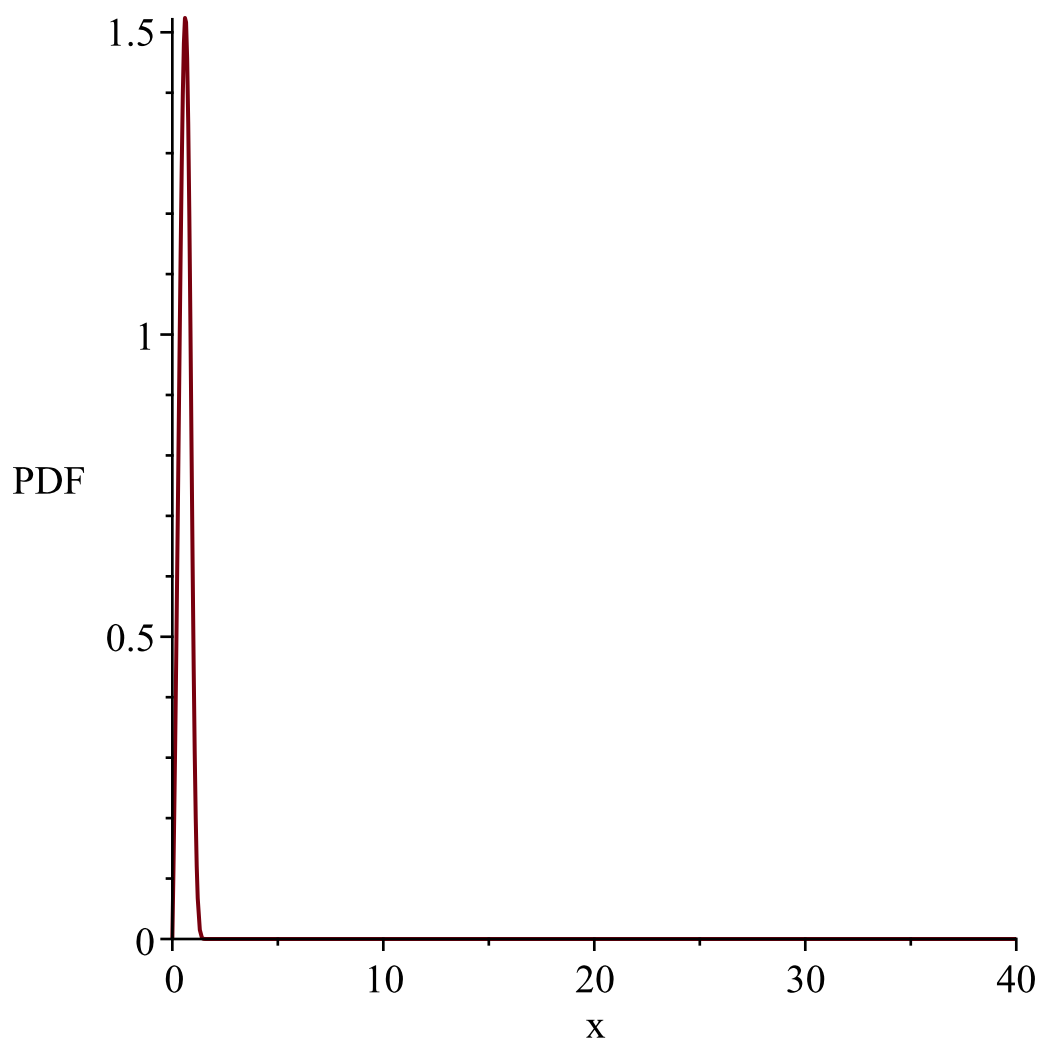
```
g := t→ -ln(t)
l := 0
u := ∞
Temp := [[y~→2 e^{-e^{-2}y~ - 2y~}], [-∞, ∞], ["Continuous", "PDF"]]
"f(x)", 2 e^{-e^{-2x} - 2x}
"h(x)", - \frac{2 e^{-e^{-2x} - 2x}}{-1 + e^{-e^{-2x}}}
```

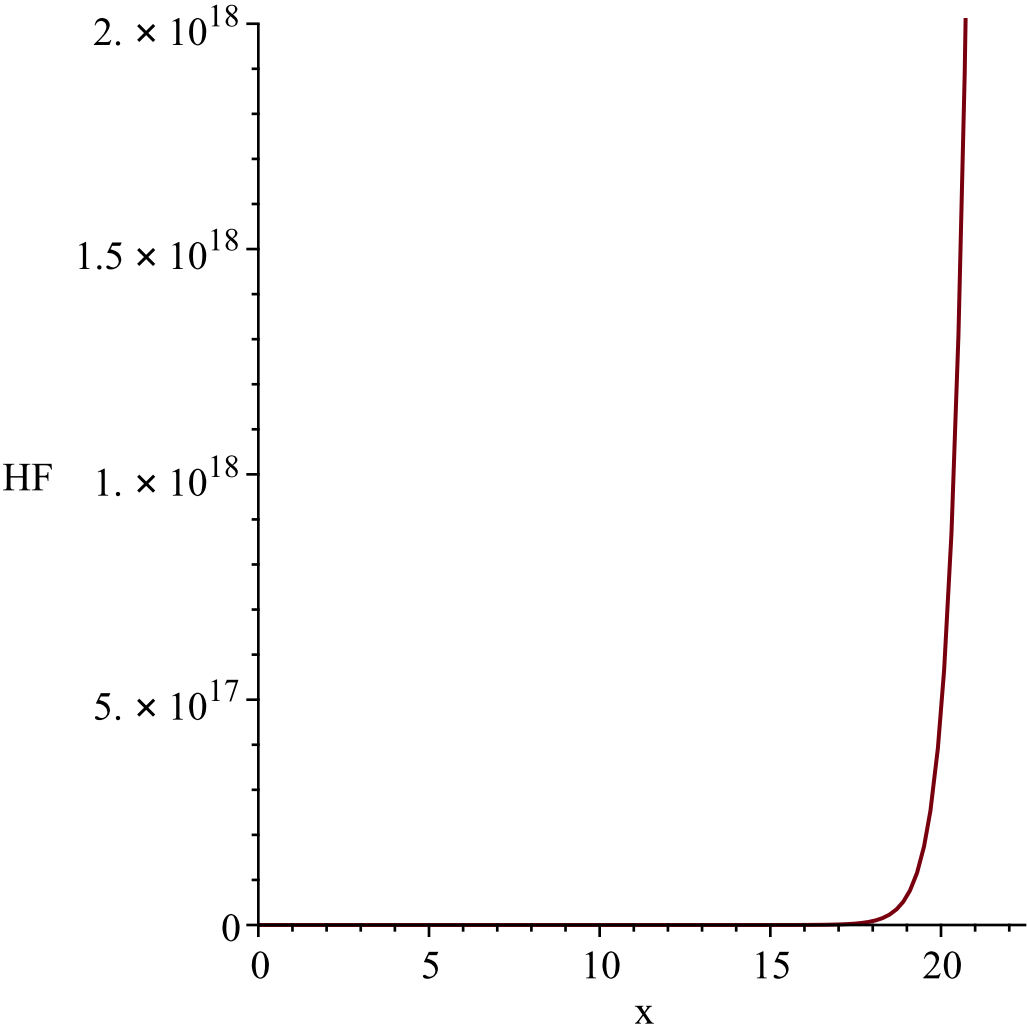




```
2\,{\rm e}^{\{-{\rm e}^{-2\,x}}-2\,x\}}
"i is", 9,
"
-----"

g := t→ln(t + 1)
l := 0
u := ∞
Temp := [[y~→2 (e^{y~} - 1) e^{-e^{2y~} + 2e^{y~} + y~ - 1}], [0, ∞], ["Continuous", "PDF"]]
"f(x)", 2 (e^x - 1) e^{-e^{2x} + 2e^x + x - 1}
"h(x)", 2 (e^x - 1) e^x
```





```
2\, \left( {{\rm e}^{\left\{ x\right\} }-1} \right) {{\rm e}^{-{{\rm e}^{\left\{ 2\,,x\right\} }}+2\,,\left\{ \right.}
{\rm e}^{\left\{ x\right\} }+x-1\left. \right\} }
"i is", 10,
" -----
-----"
```

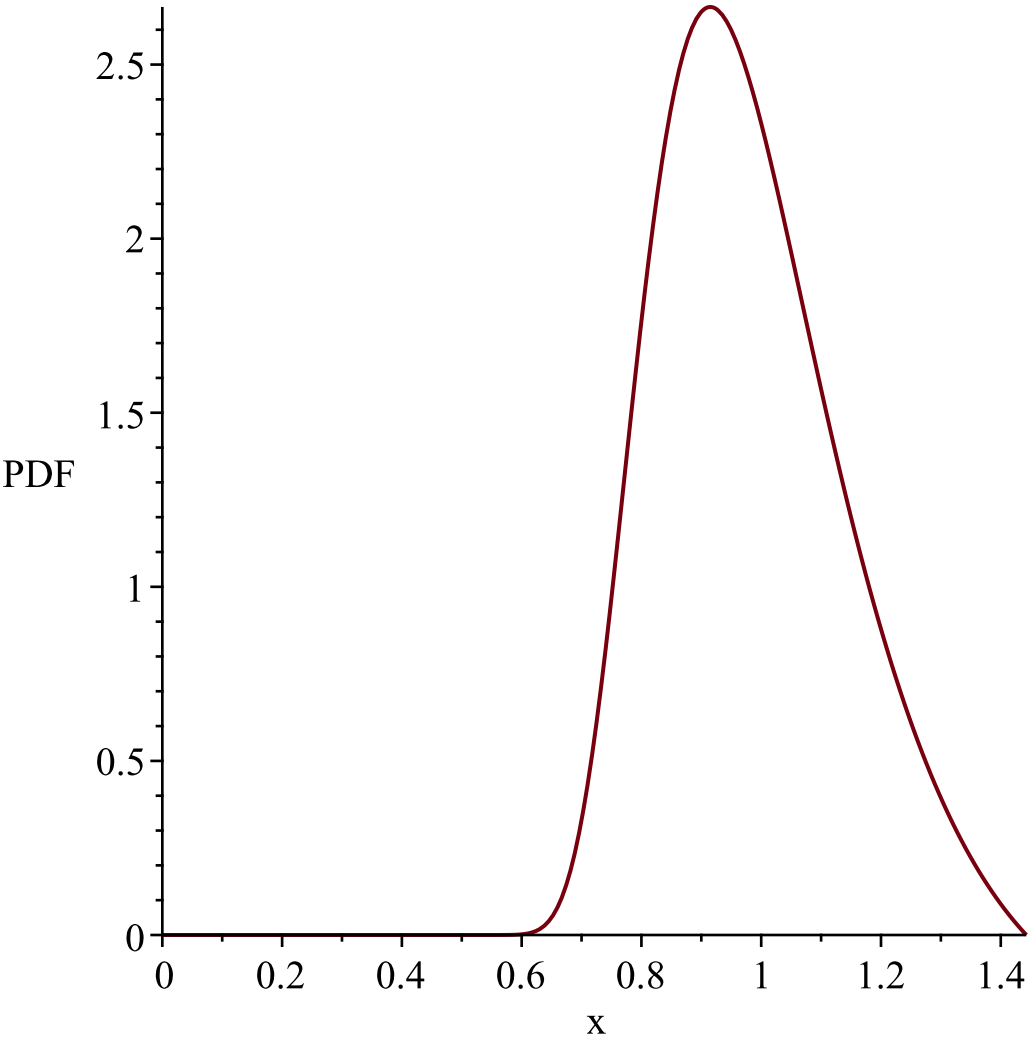
$$g:=t\rightarrow \frac{1}{\ln(t+2)}$$
$$l:=0$$
$$u:=\infty$$
$$Temp:=\left[\left[y\rightsquigarrow \frac{2\left(e^{\frac{1}{y\sim}}-2\right)e^{\frac{\frac{1}{4e^{y\sim}}y\sim-e^{y\sim}y\sim-4y\sim+1}}{y\sim}}}{y\sim^2}\right],\left[0,\frac{1}{\ln(2)}\right],["Continuous",\right.\\ \left."PDF"]\right]$$

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

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

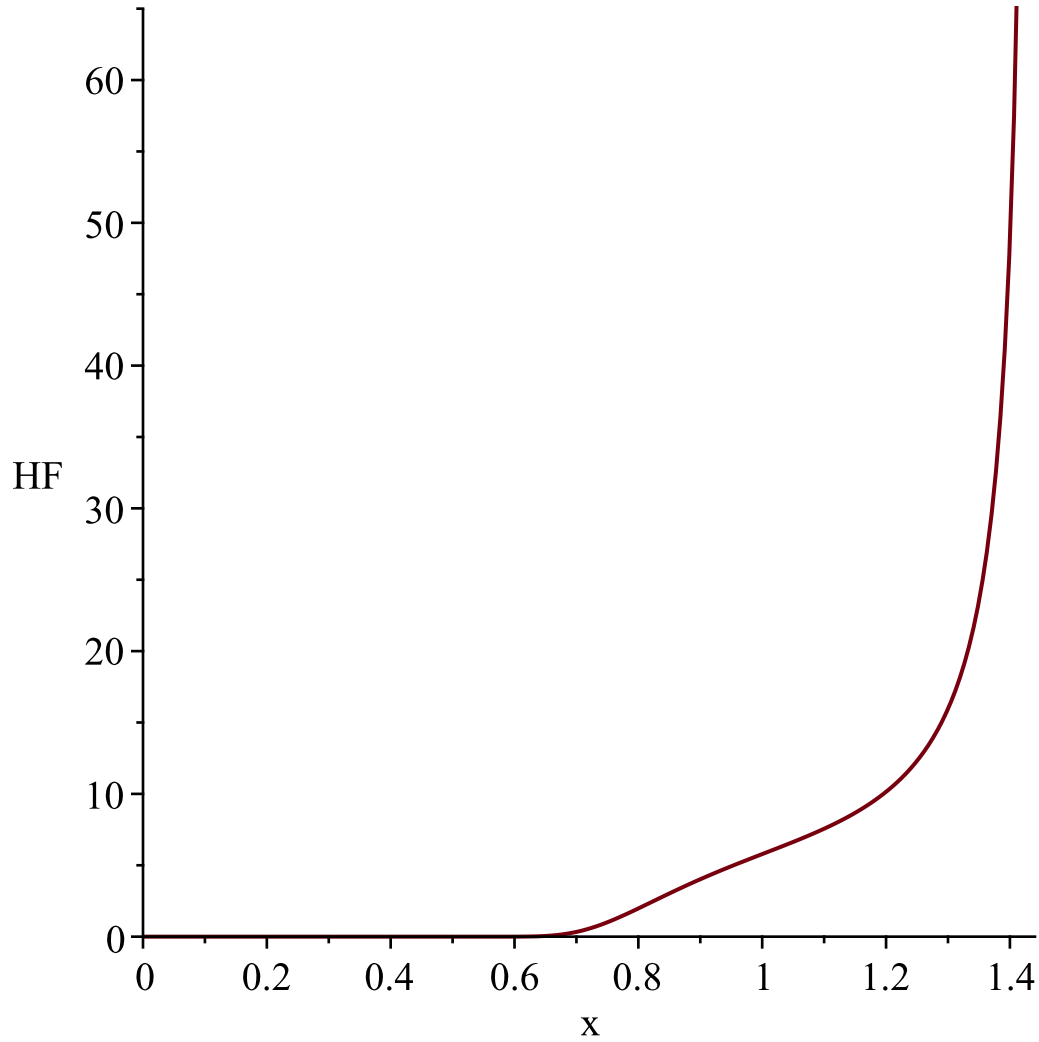
*WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, $\frac{1}{\ln(2)}$*

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



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

"i is", 11,

"-----"

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

$l := 0$

$u := \infty$

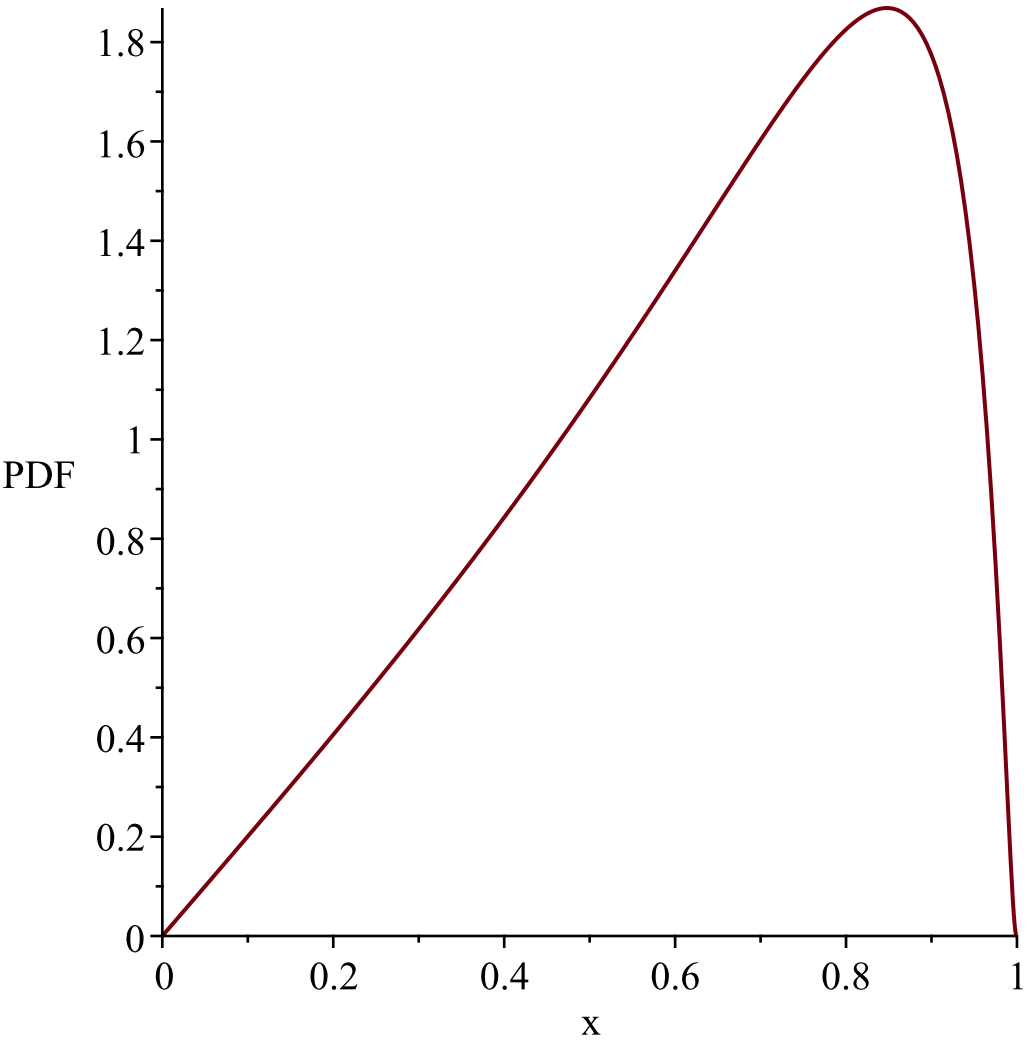
$Temp := \left[\left[y \rightarrow -\frac{2 \operatorname{arctanh}(y) e^{-\operatorname{arctanh}(y)^2}}{y^2 - 1} \right], [0, 1], ["Continuous", "PDF"] \right]$

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

"h(x)", - $\frac{2 \operatorname{arctanh}(x) e^{-\frac{1}{4} (2 \operatorname{arctanh}(x) - \ln(x + 1)) (2 \operatorname{arctanh}(x) + \ln(x + 1))} \left(e^{\ln(1 - x)^2} \right)^{1/4}}{\sqrt{(1 - x)^{\ln(x + 1)}} (x^2 - 1)}$

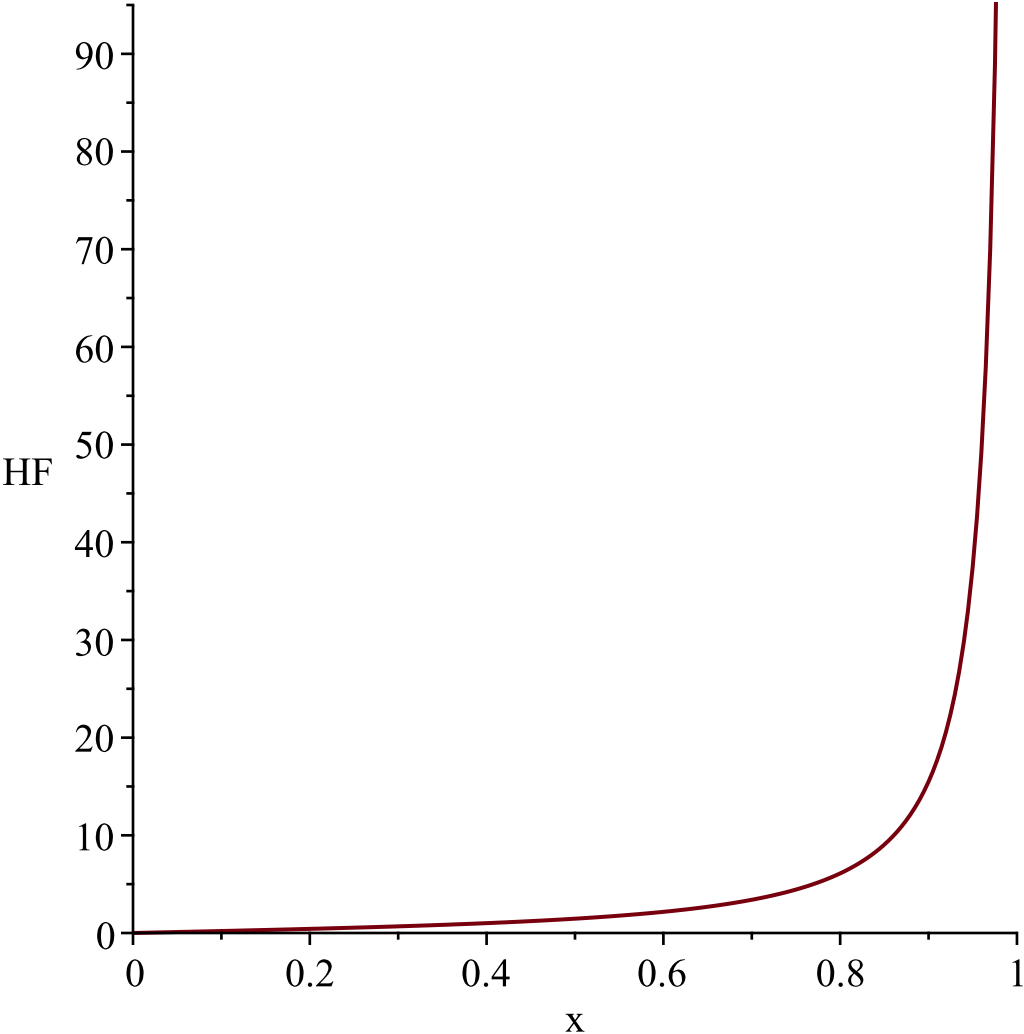
*WARNING(PlotDist): High value provided by user, 40
is greater than maximum support value of the random
variable, 1*

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



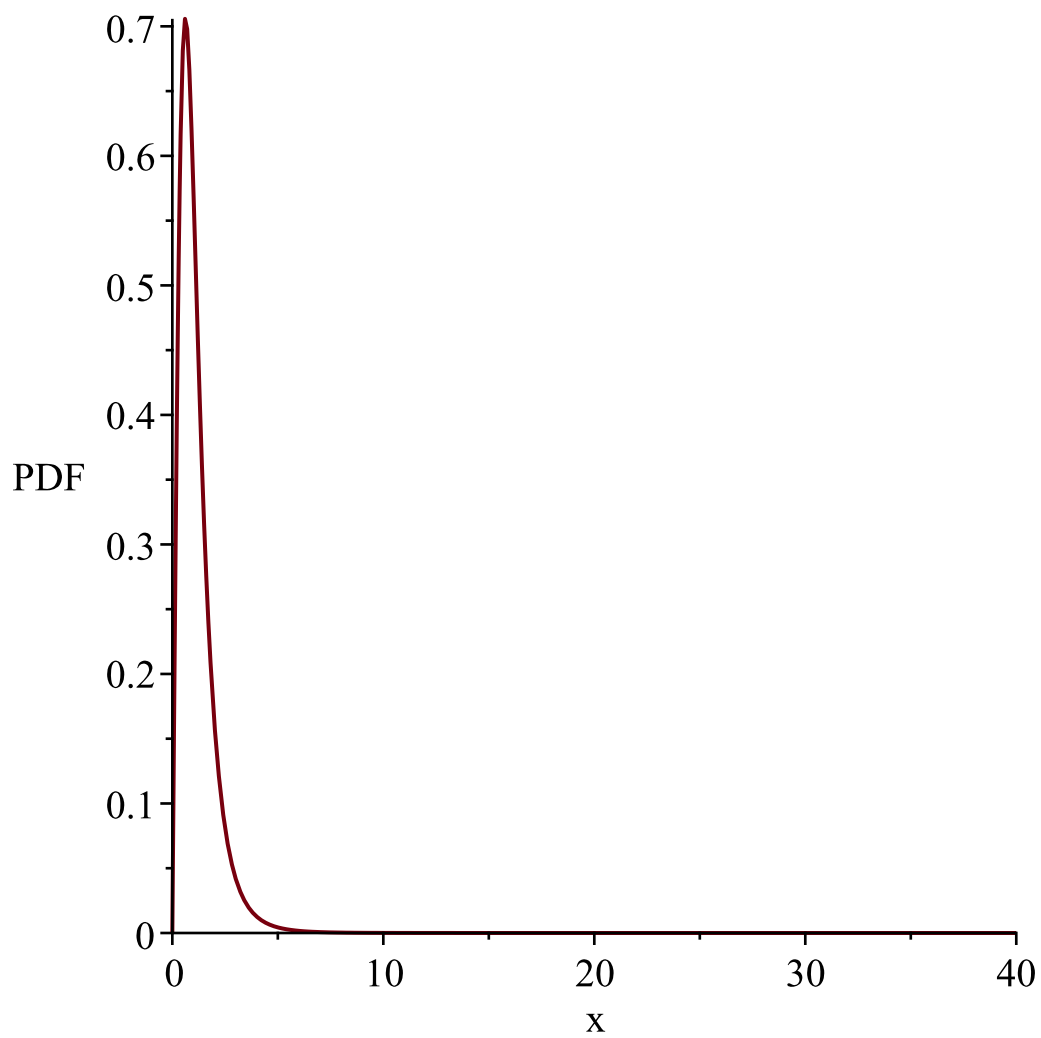
```
-2\,{\frac {{\rm arctanh} \left(x\right){{\rm e}^{-\left({\rm arctanh} \left(x\right) \right) ^{2}}}}{{x}^{2}-1}}
"i is", 12,
" -----
-----"
```

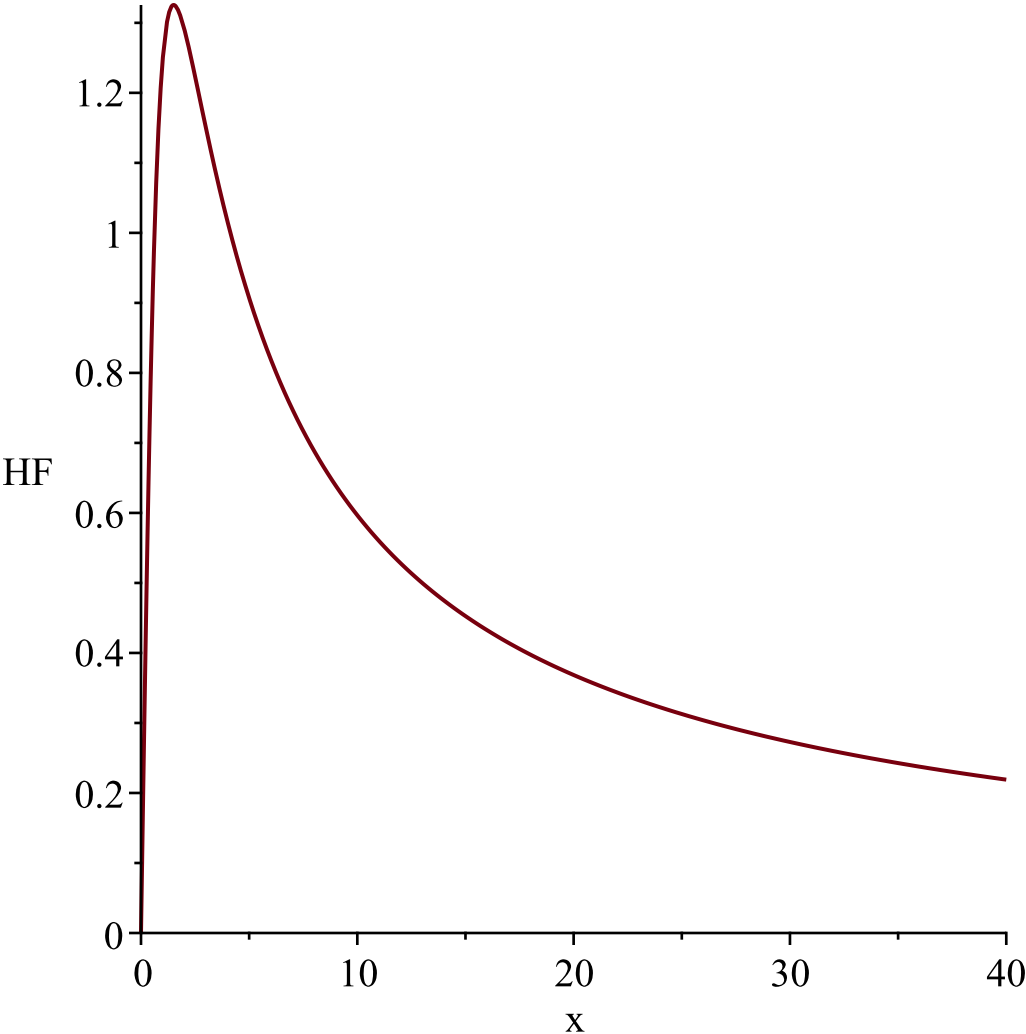
$$g:=t\rightarrow \sinh(t)$$
$$l:=0$$
$$u:=\infty$$

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

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

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





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

"i is", 13,

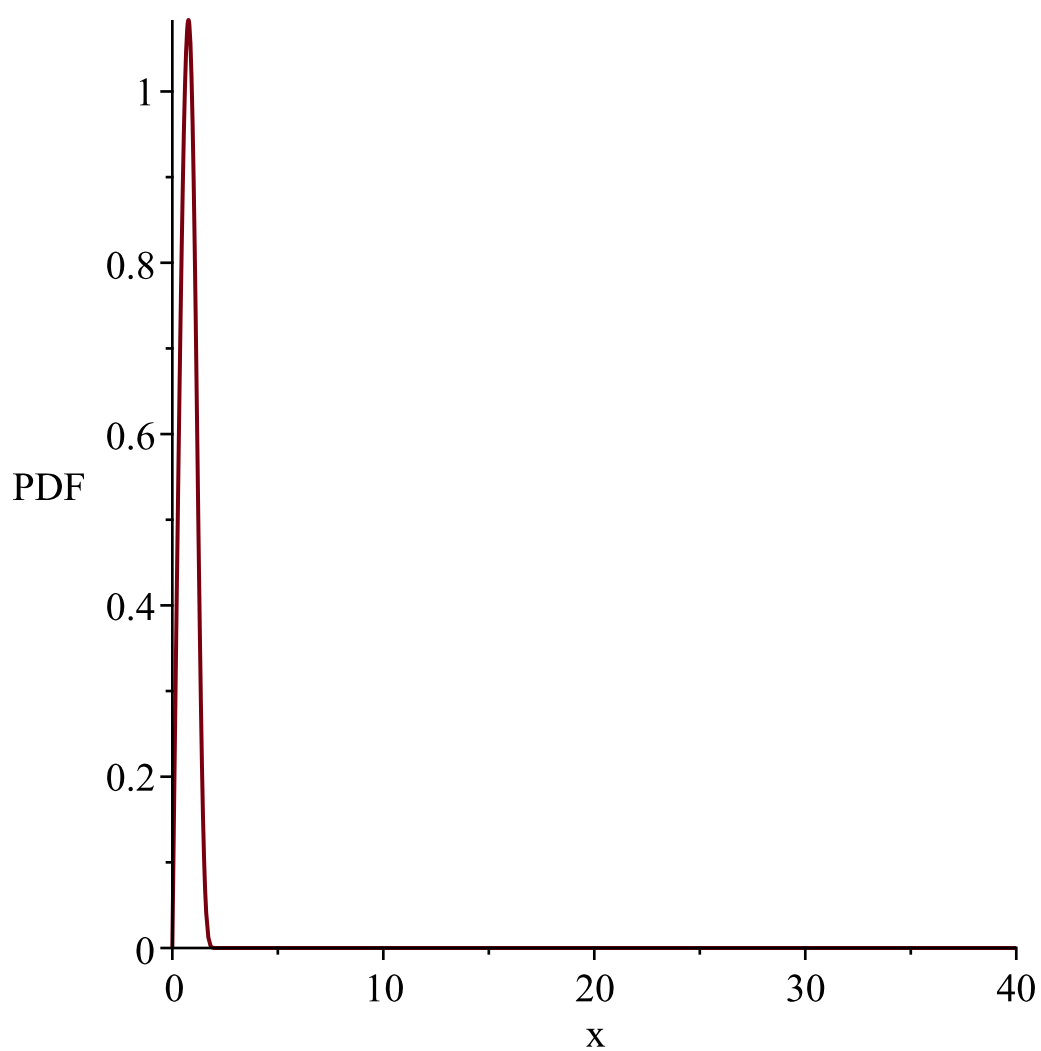
" -----

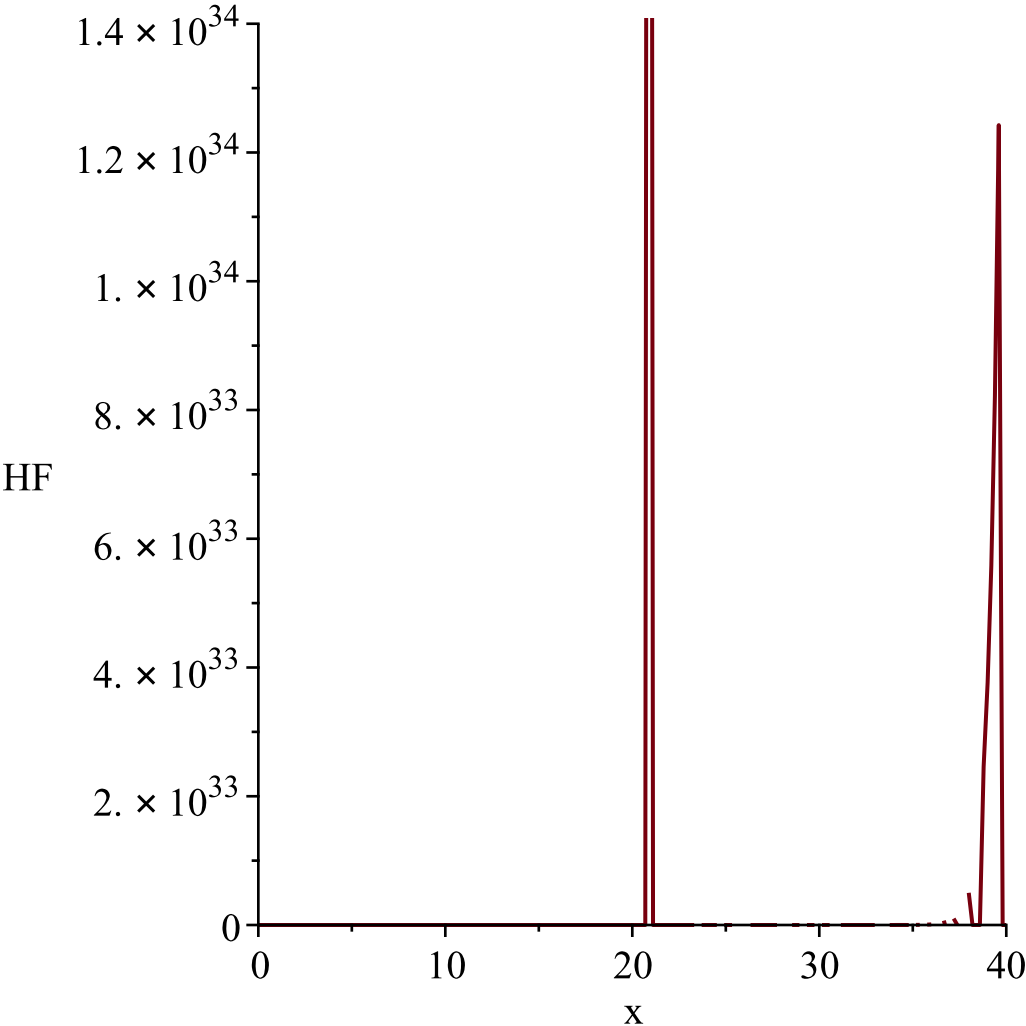
-----"

```
g := t→arcsinh(t)
l := 0
u := ∞
Temp := [[y~→2 sinh(y~) e-sinh(y~)2 cosh(y~)], [0, ∞], ["Continuous", "PDF"]]
```

"f(x)", 2 sinh(x) e^{-sinh(x)²} cosh(x)

"h(x)", 2 sinh(x) e^{-cosh(x)² + 1/2 + 1/4 e^{2x} + 1/4 e^{-2x}} cosh(x)





```
2\,\sinh \left( x \right) \left\{ {\rm e}^{\left( - \sinh \left( x \right) \right.} \right.
\left. \left. \right)^2} \right\} \cosh \left( x \right)
"i is", 14,
" -----
-----"

g := t→csch(t+1)
l := 0
u := ∞

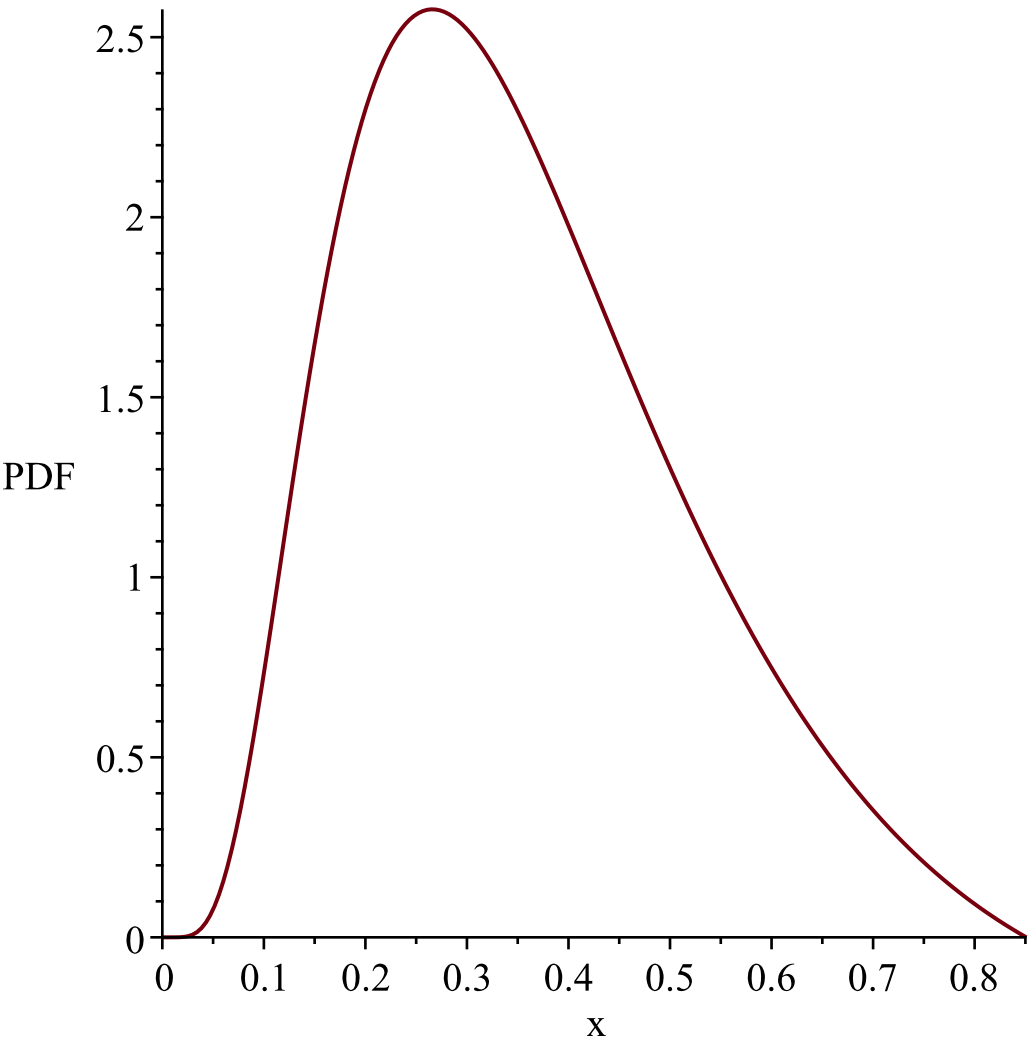
Temp := ⌈⌈ y~→ 2 (-1+arccsch(y~)) e^(-1+arccsch(y~))^2
          √ y~^2+1 |y~| ⌋, ⌈0, 2
          e-e^-1 ⌋, ["Continuous",
          "PDF"] ⌋

"f(x)", 2 (-1+arccsch(x)) e^(-1+arccsch(x))^2
          √ x^2+1 |x|
```

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

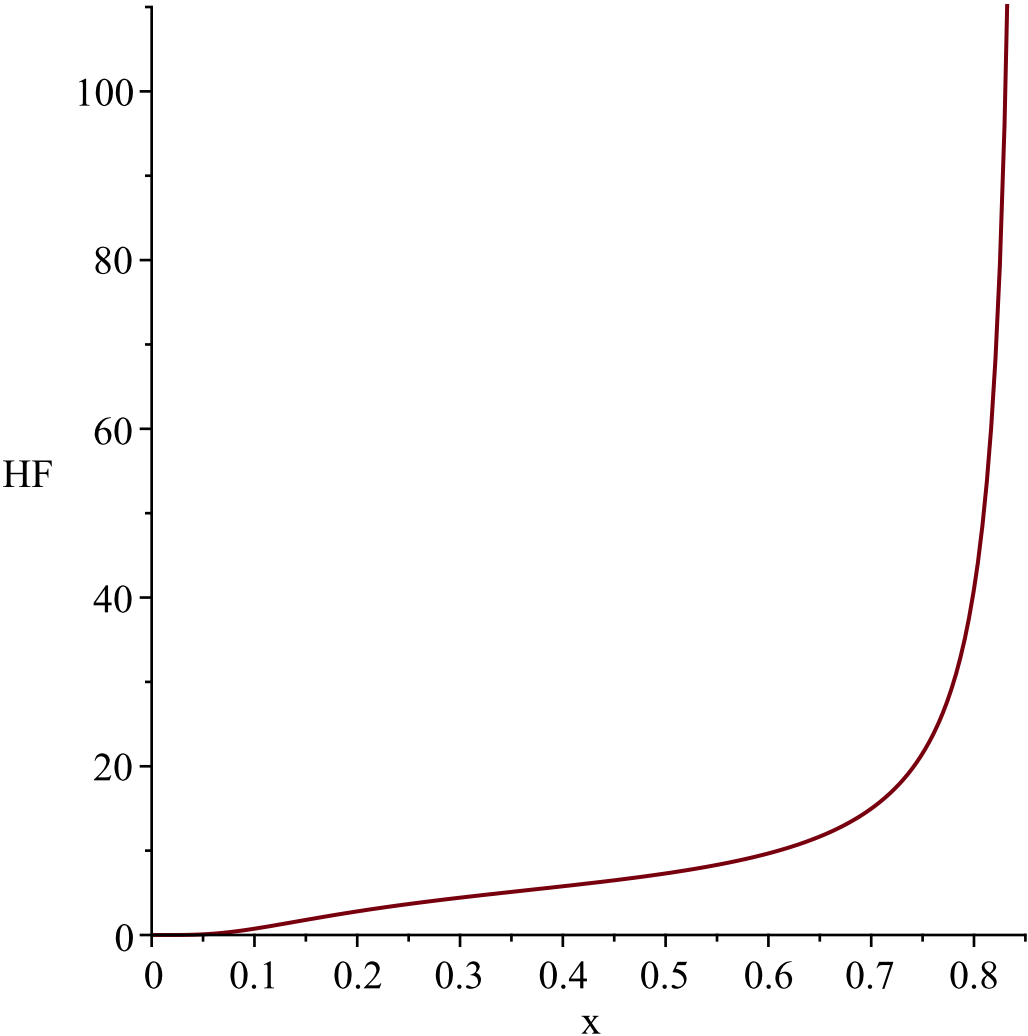
WARNING(PlotDist): High value provided by user, 40 is greater than maximum support value of the random variable, $\frac{2}{e - e^{-1}}$

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



```
2\,{\frac { \left( -1+{\rm arccsch} \left(x\right) \right) {{\rm e}}^{\left( -\right.
\left( -1+{\rm arccsch} \left(x\right) \right) ^{2}})}}{\sqrt {
{x}^{2}
+1} \left| x \right| }}
"i is",15,
```

```
" -----
-----"
```

```
g := t→arccsch(t + 1)
l := 0
u := ∞
```

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

```
["Continuous", "PDF"]
```

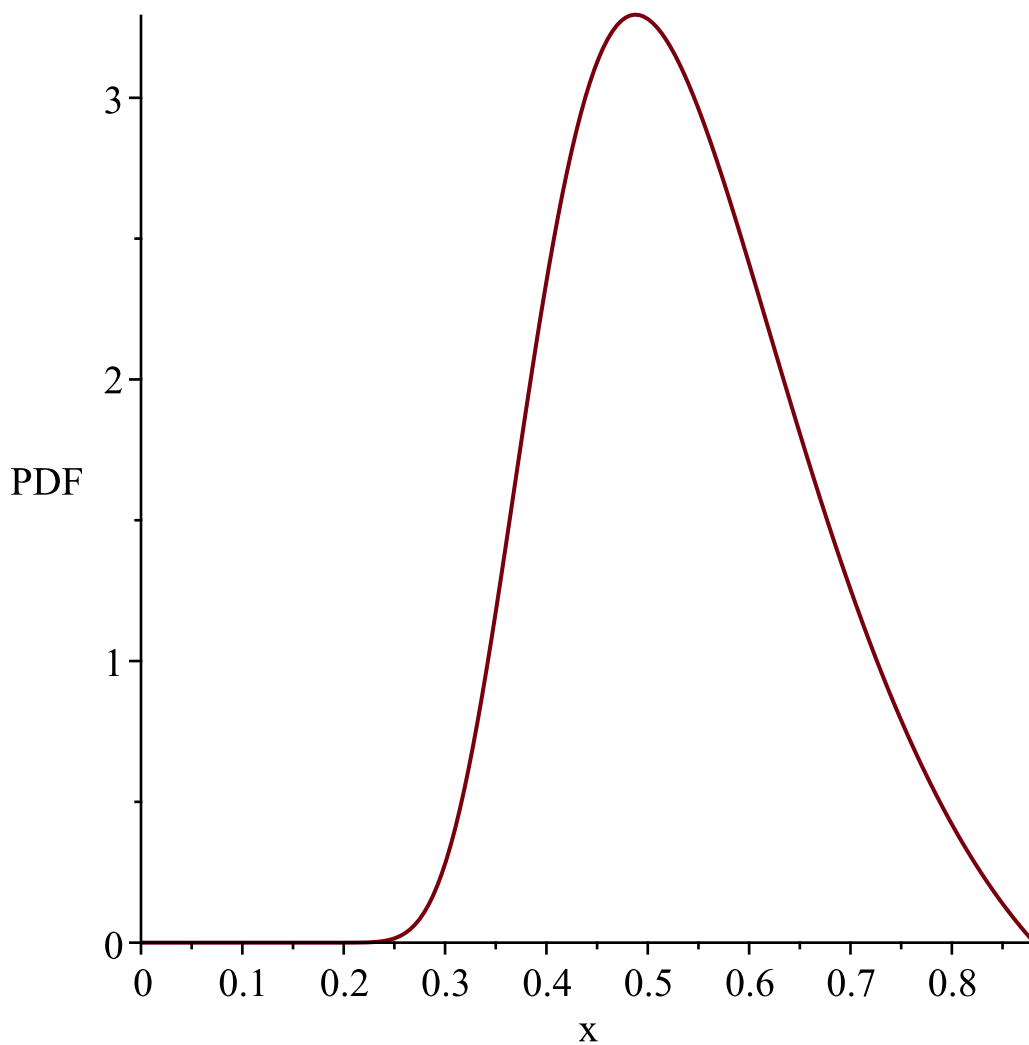
$$\text{"f(x)", } - \frac{2 (\sinh(x) - 1) e^{-\frac{(\sinh(x) - 1)^2}{\sinh(x)^2}} \cosh(x)}{\sinh(x)^3}$$

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

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

variable, $\ln(1 + \sqrt{2})$

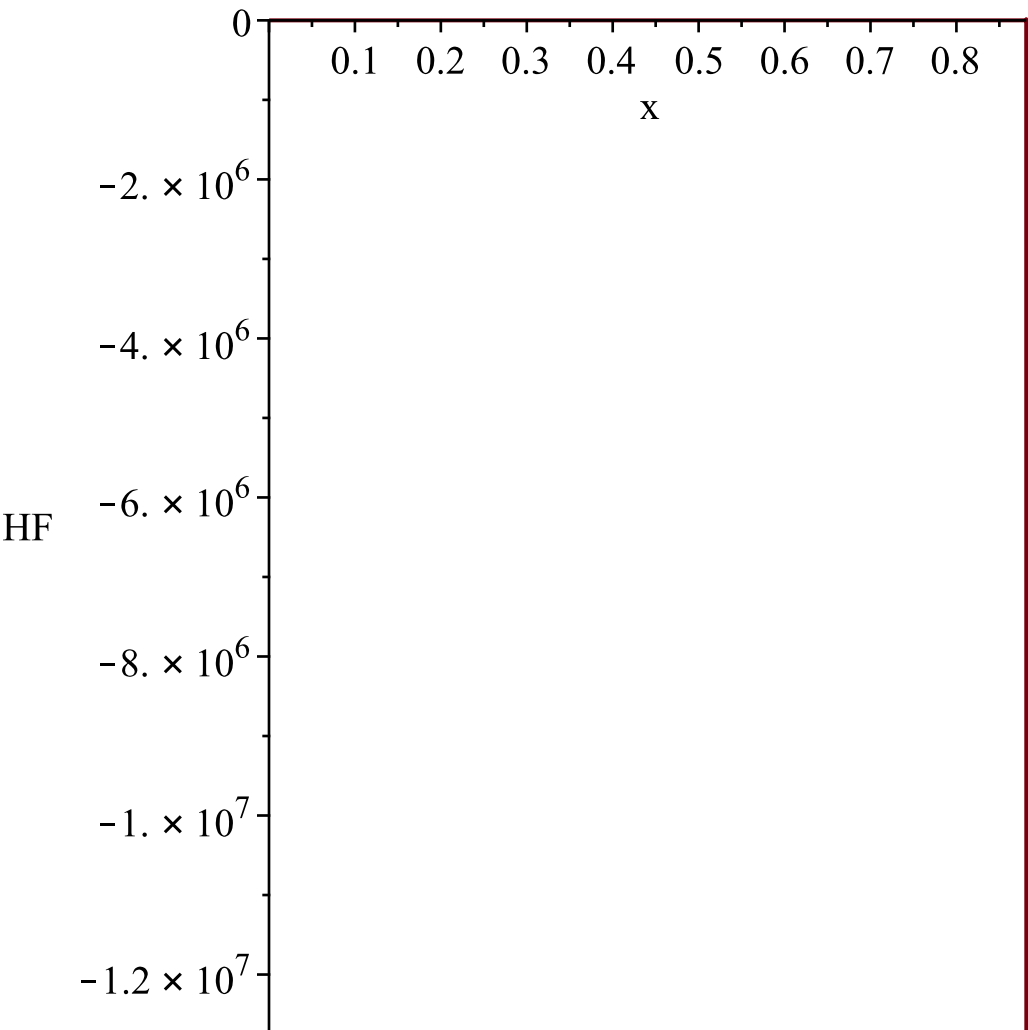
Resetting high to RV's maximum support value



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

variable, $\ln(1 + \sqrt{2})$

Resetting high to RV's maximum support value



$$-2\backslash,\{\frac{\left(\sinh\left(x\right)-1\right)\cosh\left(x\right)}{\left(\sinh\left(x\right)\right)^3}\}\{\rm e}^{\{-\frac{\left(\sinh\left(x\right)-1\right)^2}{\sinh\left(x\right)^2}\}}\}$$

"i is",16,
"-----"
"-----"

$$\begin{array}{l} g:=t\rightarrow \frac{1}{\tanh(t+1)} \\ l:=0 \\ u:=\infty \end{array}$$

$$Temp:=\left[\left[y\leadsto \frac{2\left(-1+\operatorname{arctanh}\left(\frac{1}{y\leadsto}\right)\right)e^{-\left(-1+\operatorname{arctanh}\left(\frac{1}{y\leadsto}\right)\right)^2}}{y\leadsto^2-1}\right],\left[1,\frac{e+e^{-1}}{e-e^{-1}}\right],\right]$$

["Continuous", "PDF"]

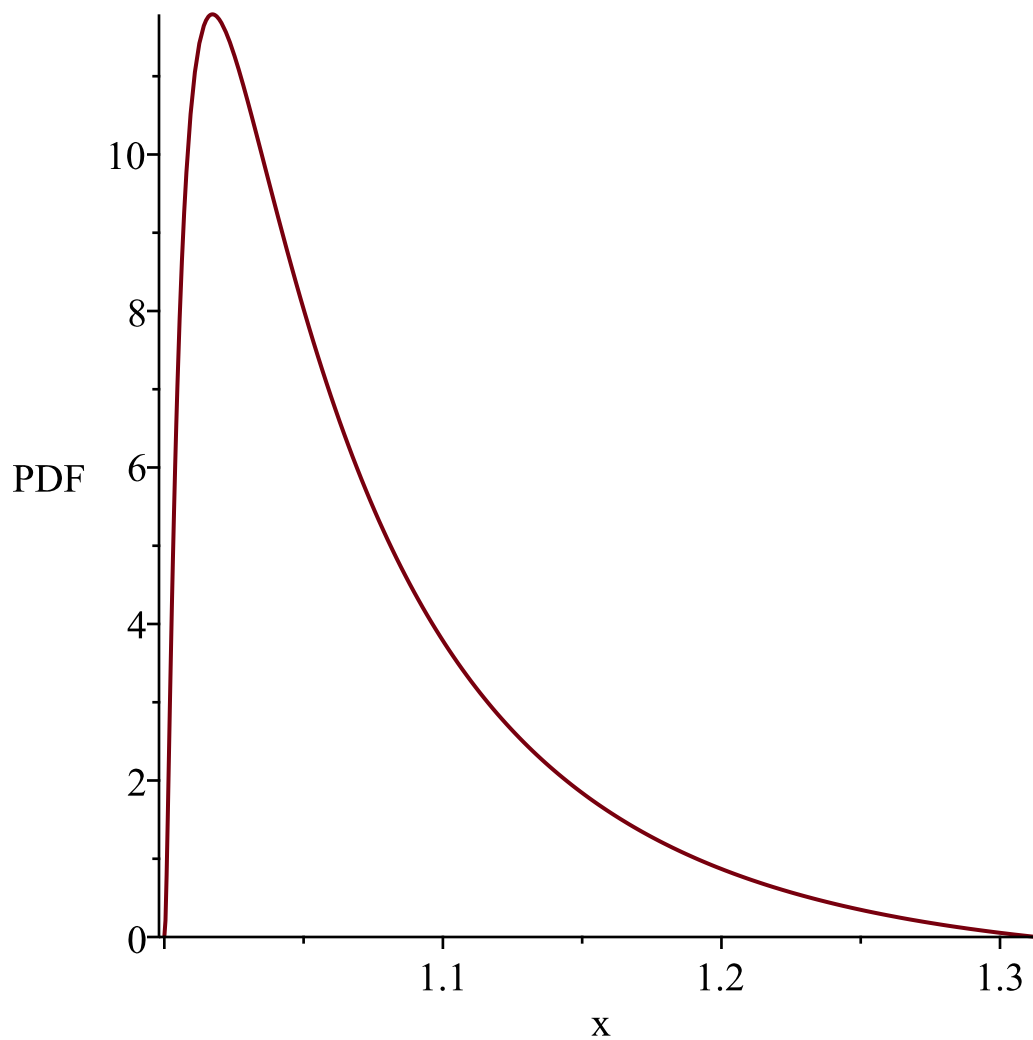
"f(x)",
$$\frac{2 \left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right) \right) e^{-\left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2}}{x^2 - 1}$$

"h(x)",
$$-\left(2 e^{-\left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right)\right)^2} \left(-1 + \operatorname{arctanh}\left(\frac{1}{x}\right) \right) \right) \Bigg/ \left(\left((x-1)^{\frac{1}{2} \ln(x)} + 1 \right) e^{-\frac{1}{4} \ln(x+1)^2 - \frac{1}{4} \ln(x-1)^2 - 1} x + (x-1)^{\frac{1}{2} \ln(x+1)} e^{-\frac{1}{4} \ln(x+1)^2 - \frac{1}{4} \ln(x-1)^2 - 1} - x + 1 \right) (x+1) \right)$$

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, $\frac{e+e^{-1}}{e-e^{-1}}$

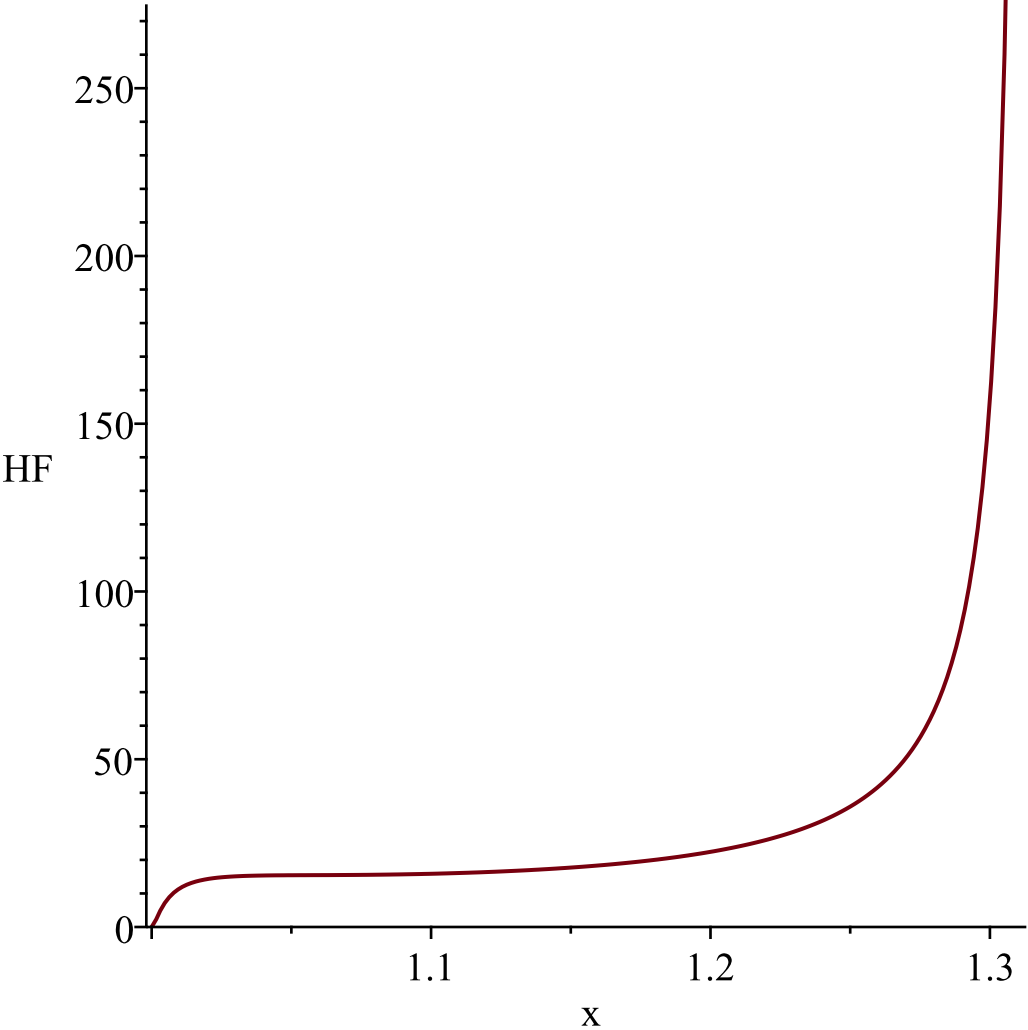
Resetting high to RV's maximum support value



*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



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

$$\begin{aligned} g &:= t \rightarrow \frac{1}{\sinh(t+1)} \\ l &:= 0 \\ u &:= \infty \\ Temp &:= \left[\left[y \rightarrow \frac{2 \left(-1 + \operatorname{arcsinh} \left(\frac{1}{y} \right) \right) e^{- \left(-1 + \operatorname{arcsinh} \left(\frac{1}{y} \right) \right)^2}}{\sqrt{y^2+1} \, |y|} \right], \left[0, \frac{2}{e - e^{-1}} \right] \right] \end{aligned}$$

["Continuous", "PDF"]

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

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

$$\left(\sqrt{x^2 + 1} |x| \left(x^{2 \ln(\sqrt{x^2 + 1} + 1) + 2} e^{-1 - \ln(\sqrt{x^2 + 1} + 1)^2 - \ln(x)^2} \right. \right.$$

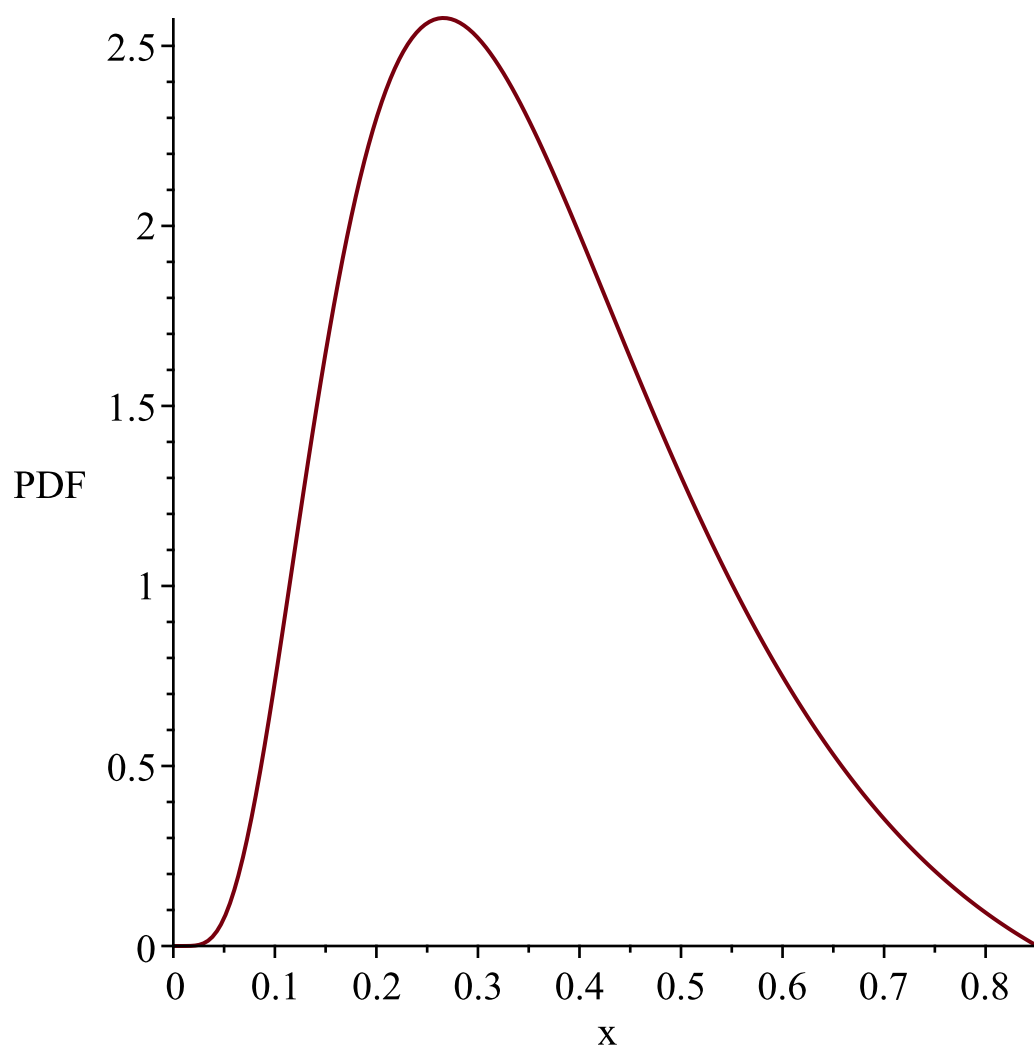
$$+ 2 x^{2 \ln(\sqrt{x^2 + 1} + 1)} e^{-1 - \ln(\sqrt{x^2 + 1} + 1)^2 - \ln(x)^2} \sqrt{x^2 + 1}$$

$$\left. \left. + 2 x^{2 \ln(\sqrt{x^2 + 1} + 1)} e^{-1 - \ln(\sqrt{x^2 + 1} + 1)^2 - \ln(x)^2 - x^2} \right) \right)$$

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

$$\text{variable, } \frac{2}{e - e^{-1}}$$

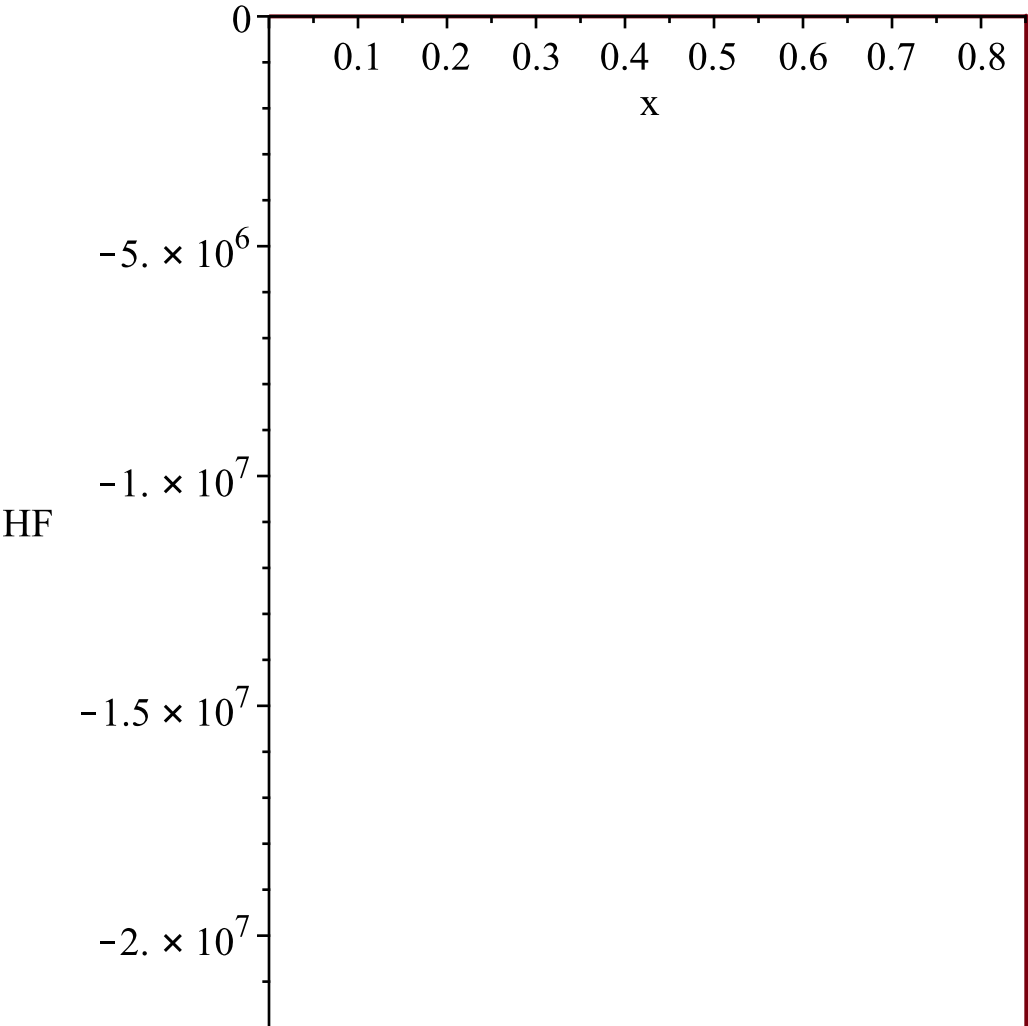
Resetting high to RV's maximum support value



*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



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

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

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

$$l:=0$$

$$u:=\infty$$

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

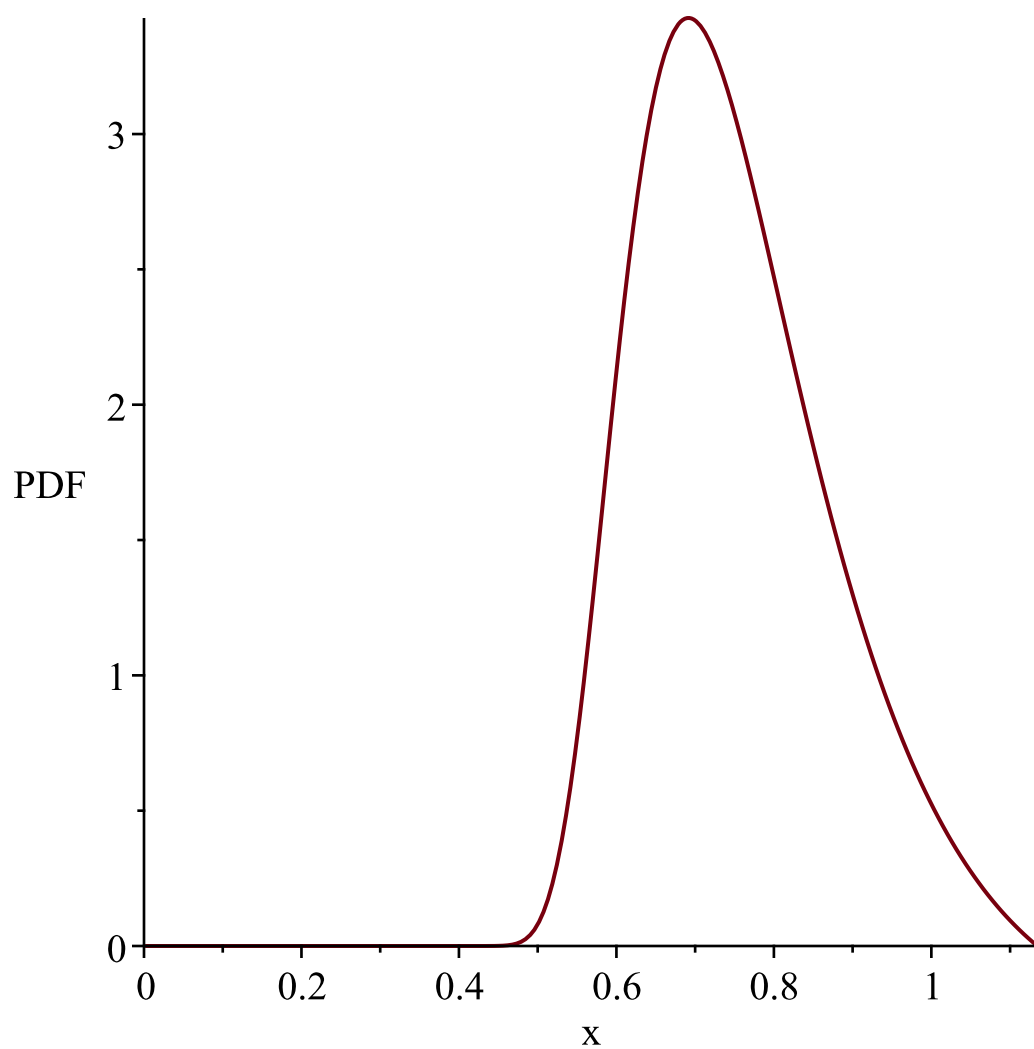
["Continuous", "PDF"]

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

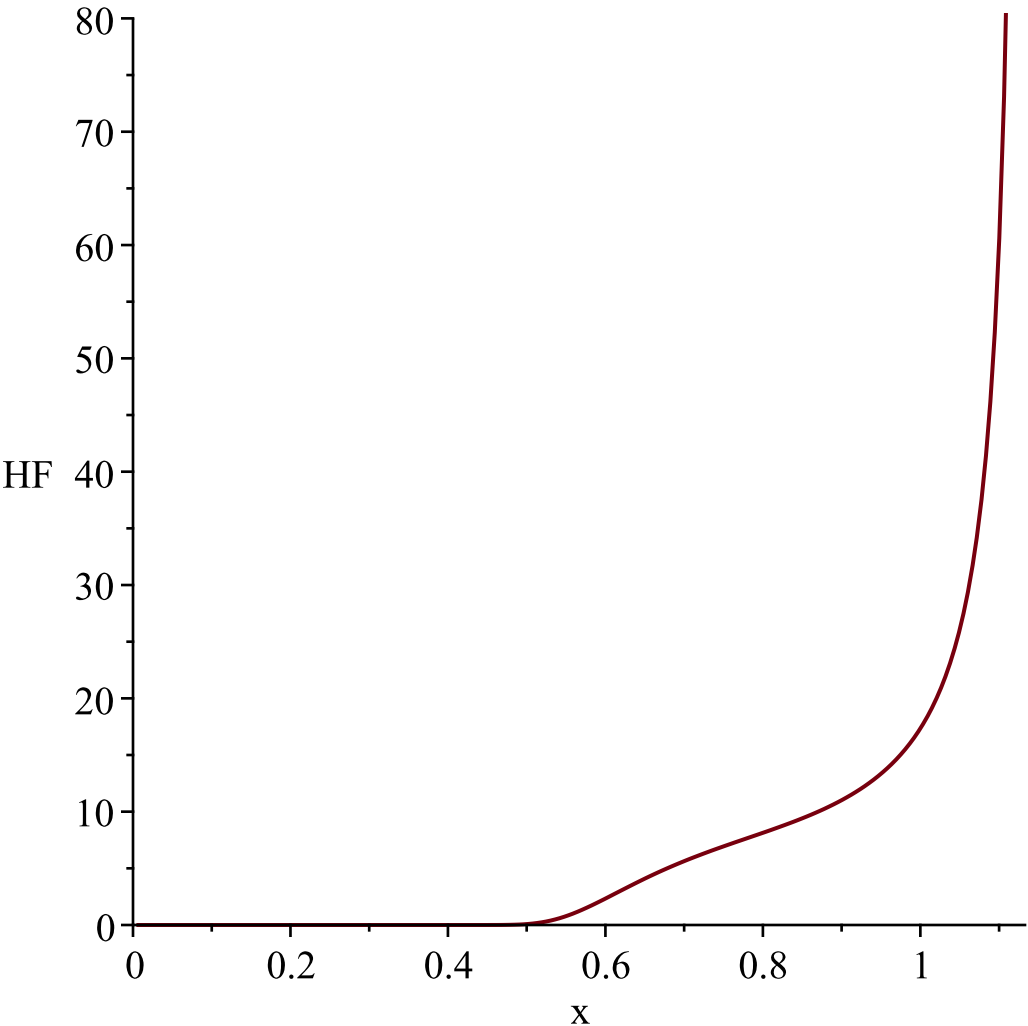
"h(x)",
$$-\frac{2 \left(-1 + \sinh\left(\frac{1}{x}\right) \right) e^{-\left(-1 + \sinh\left(\frac{1}{x}\right)\right)^2} \cosh\left(\frac{1}{x}\right)}{x^2 \left(-1 + e^{-\frac{1}{4} \left(e^{\frac{4}{x}} - 4 e^{\frac{3}{x}} + 2 e^{\frac{2}{x}} + 4 e^{\frac{1}{x}} + 1 \right) e^{-\frac{2}{x}}} \right)}$$

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

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, $\frac{1}{\ln(1 + \sqrt{2})}$
Resetting high to RV's maximum support value*



```

2\,{\frac { \left( -1+\sinh \left( {x}^{-1} \right) \right) \left( {\rm e}^{\left( -\left( -1+\sinh \left( {x}^{-1} \right) \right) \right)^{2}}\cosh \left( {x}^{-1} \right) \right) }{{x}^{2}}}
"i is", 19,
" -----
-----"

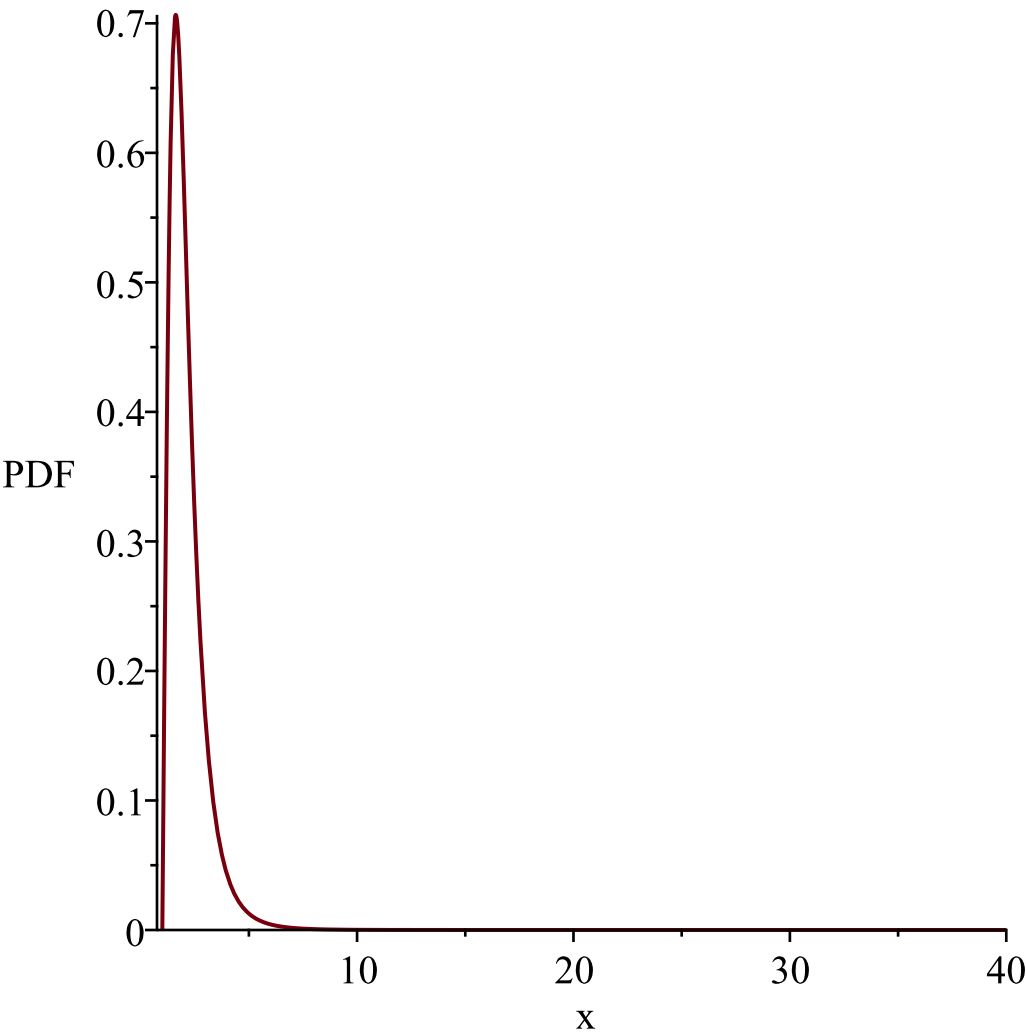
```

$$\begin{aligned}
&g:=t\rightarrow \frac{1}{\operatorname{csch}(t)}+1 \\
&l:=0 \\
&u:=\infty \\
&Temp:=\left[\left[y\rightarrow \frac{2\operatorname{arccsch}\left(\frac{1}{y-1}\right)e^{-\operatorname{arccsch}\left(\frac{1}{y-1}\right)^2}}{\sqrt{y^2-2y+2}}\right],\left[1,\infty\right],\left["Continuous","PDF"\right]\right] \\
&\text{"f(x)",}\frac{2\operatorname{arccsch}\left(\frac{1}{x-1}\right)e^{-\operatorname{arccsch}\left(\frac{1}{x-1}\right)^2}}{\sqrt{x^2-2x+2}}
\end{aligned}$$

$$\begin{aligned}
 \text{"h(x)", -} & \frac{2 \operatorname{arccsch}\left(\frac{1}{x-1}\right) e^{-\operatorname{arccsch}\left(\frac{1}{x-1}\right)^2}}{\sqrt{x^2-2 x+2} \left(-1+2 \left(\int_1^x \frac{\operatorname{arccsch}\left(\frac{1}{t-1}\right) e^{-\operatorname{arccsch}\left(\frac{1}{t-1}\right)^2}}{\sqrt{t^2-2 t+2}} d t\right)\right)}
 \end{aligned}$$

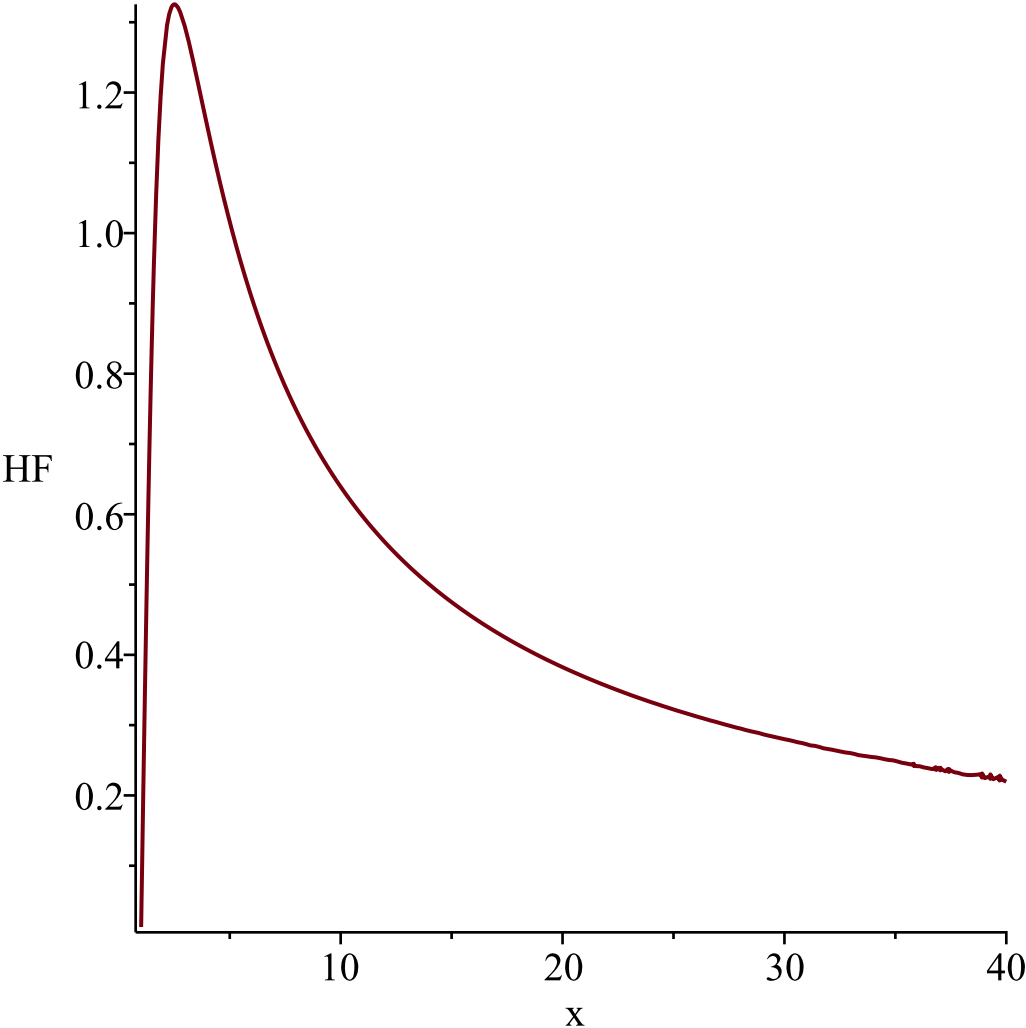
*WARNING(PlotDist): Low value provided by user, 0
 is less than minimum support value of random variable*
 1

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



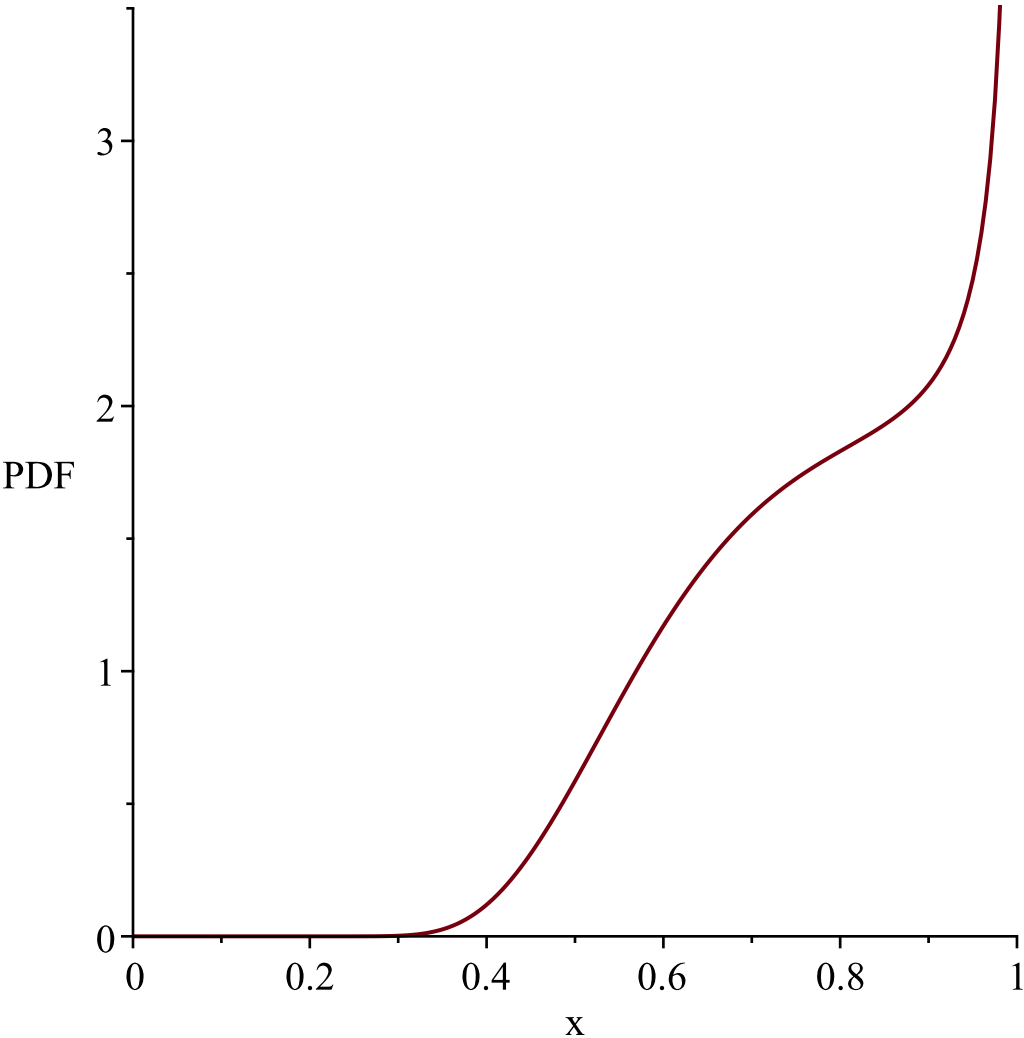
```
2\,{\frac {\left( {\rm arccsch} \left( \left( x-1 \right) ^{-1}\right) {\rm e}^{- \left( {\rm arccsch} \left( \left( x-1 \right) ^{-1} \right) \right) ^{2}}}{\sqrt {{x}^{2}-2\,x+2}}}
```

"i is", 20,
" _____"
"-----"

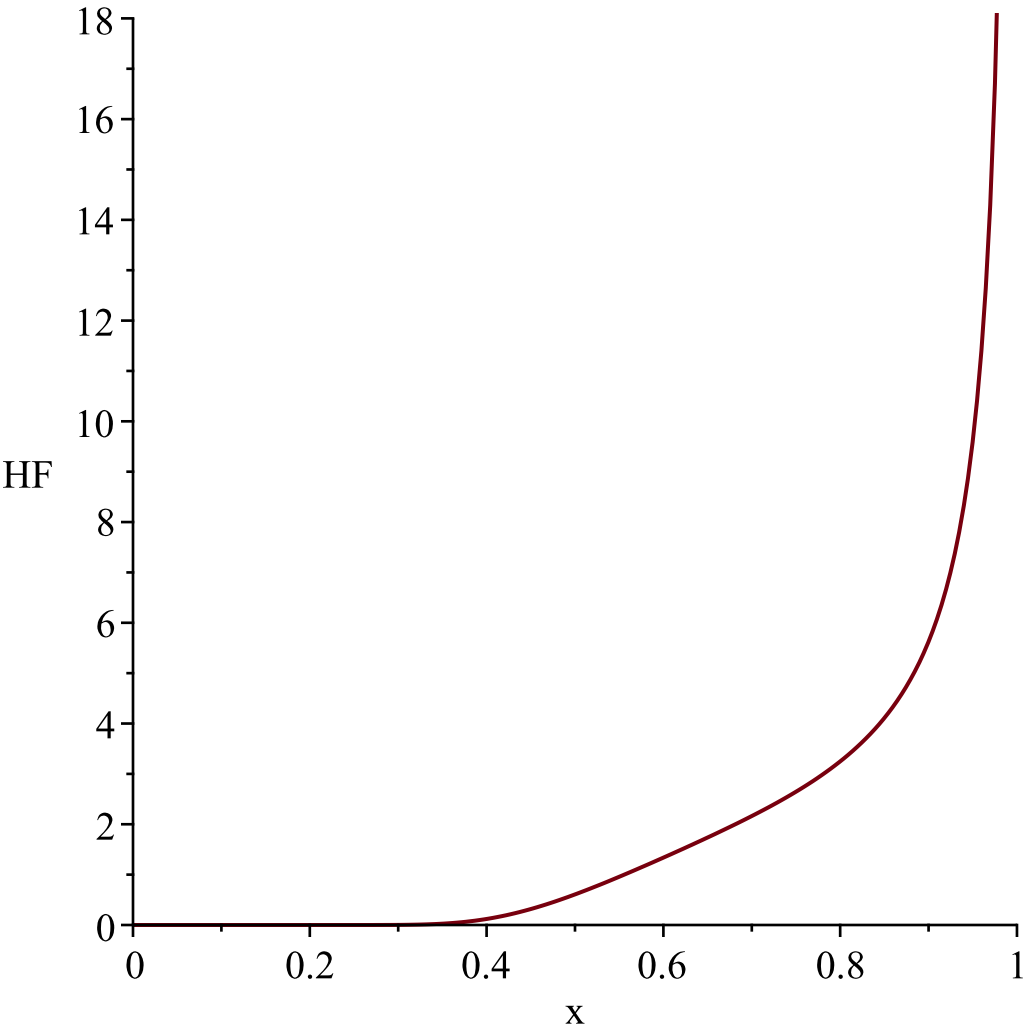
$$g:=t\rightarrow \tanh\left(\frac{1}{t}\right)$$
$$l:=0$$
$$u:=\infty$$
$$Temp:=\left[\left[y\rightsquigarrow-\frac{e^{-\frac{1}{\operatorname{arctanh}(y\sim)^2}}}{\operatorname{arctanh}(y\sim)^3\left(y\sim^2-1\right)}\right],\left[0,1\right],\left["Continuous","PDF"\right]\right]$$
$$\text{"f(x)",}-\frac{e^{-\frac{1}{\operatorname{arctanh}(x)^2}}}{\operatorname{arctanh}(x)^3\left(x^2-1\right)}$$

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



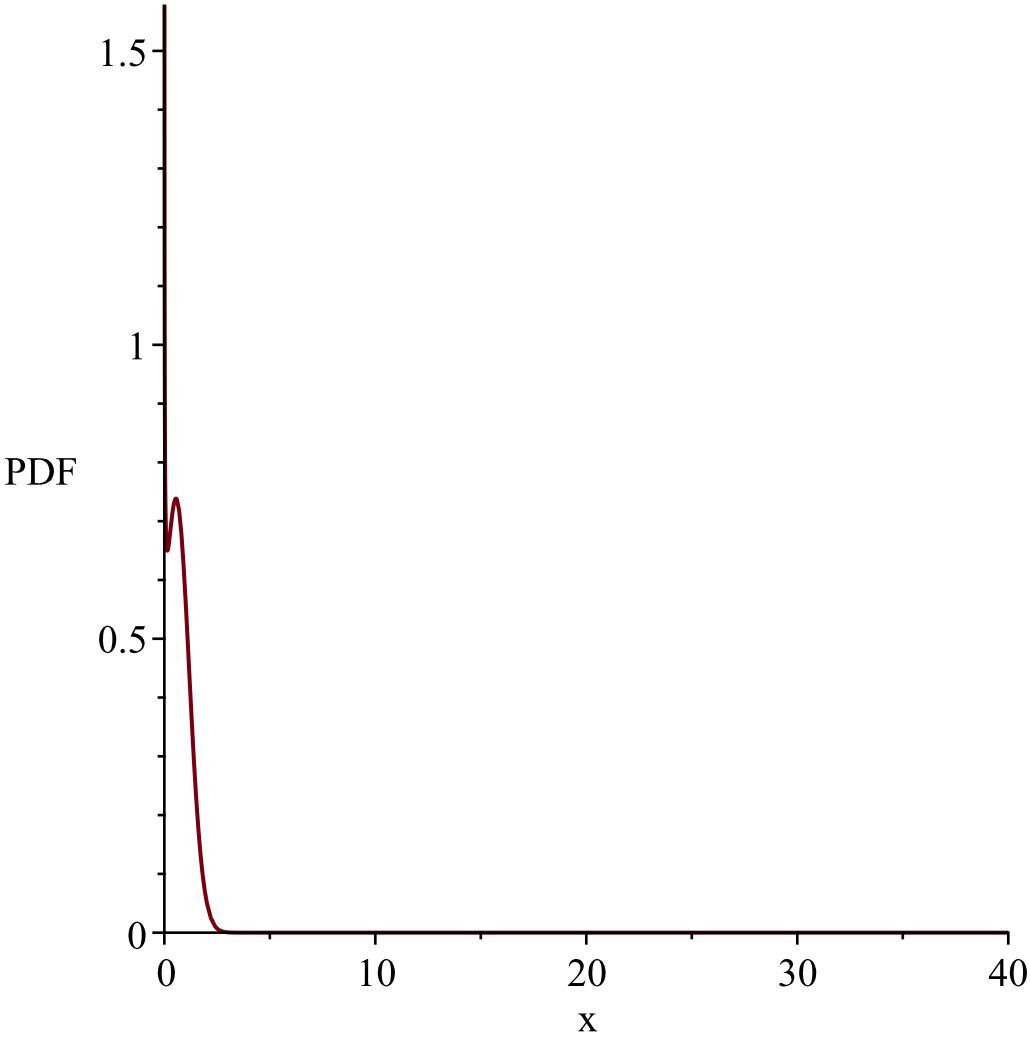
WARNING(PlotDist): High value provided by user, 40 is greater than maximum support value of the random variable, 1
Resetting high to RV's maximum support value



```
-2\,{\frac {1}{\left( {\rm arctanh} \left(x\right) \right) ^{3}}
\left( {x}^{2}-1 \right) }{{\rm e}^{-\left( {\rm arctanh}
\left(x
\right) \right) ^{-2}}}}
"i is",21,
"
-----"
-----"
```

$$g:=t\rightarrow \operatorname{csch}\left(\frac{1}{t}\right)$$
$$l:=0$$
$$u:=\infty$$
$$Temp:=\left[\left[y\rightsquigarrow \frac{2\,e^{-\frac{1}{\operatorname{arccsch}(y\sim)^2}}}{\sqrt{y\sim^2+1}\,\operatorname{arccsch}(y\sim)^3\,|y\sim|}\right],[0,\infty],[\text{"Continuous"},\text{"PDF"}]\right]$$
$$\text{"f(x)"},\frac{2\,e^{-\frac{1}{\operatorname{arccsch}(x)^2}}}{\sqrt{x^2+1}\,\operatorname{arccsch}(x)^3\,|x|}$$

$$\begin{aligned}
 \text{"h(x)", } &= \frac{-\frac{1}{\operatorname{arcsch}(x)^2}}{2 e^{\frac{-1}{\operatorname{arcsch}(x)^2}} \sqrt{x^2+1} \operatorname{arcsch}(x)^3 |x| \left(-1 + 2 \left(\int_0^x \frac{e^{\frac{-1}{\operatorname{arcsch}(t)^2}}}{\sqrt{t^2+1} \operatorname{arcsch}(t)^3 |t|} dt \right) \right)}
 \end{aligned}$$



Warning, computation interrupted