$$4\,x\,e^{-2x}$$

"i is", 1,

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

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

"g(x)", x^2, "base", $4\,x\,e^{-2x}$, "GammaRV(2,2)"

"f(x)", $2\,e^{-2\sqrt{x}}$

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

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

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

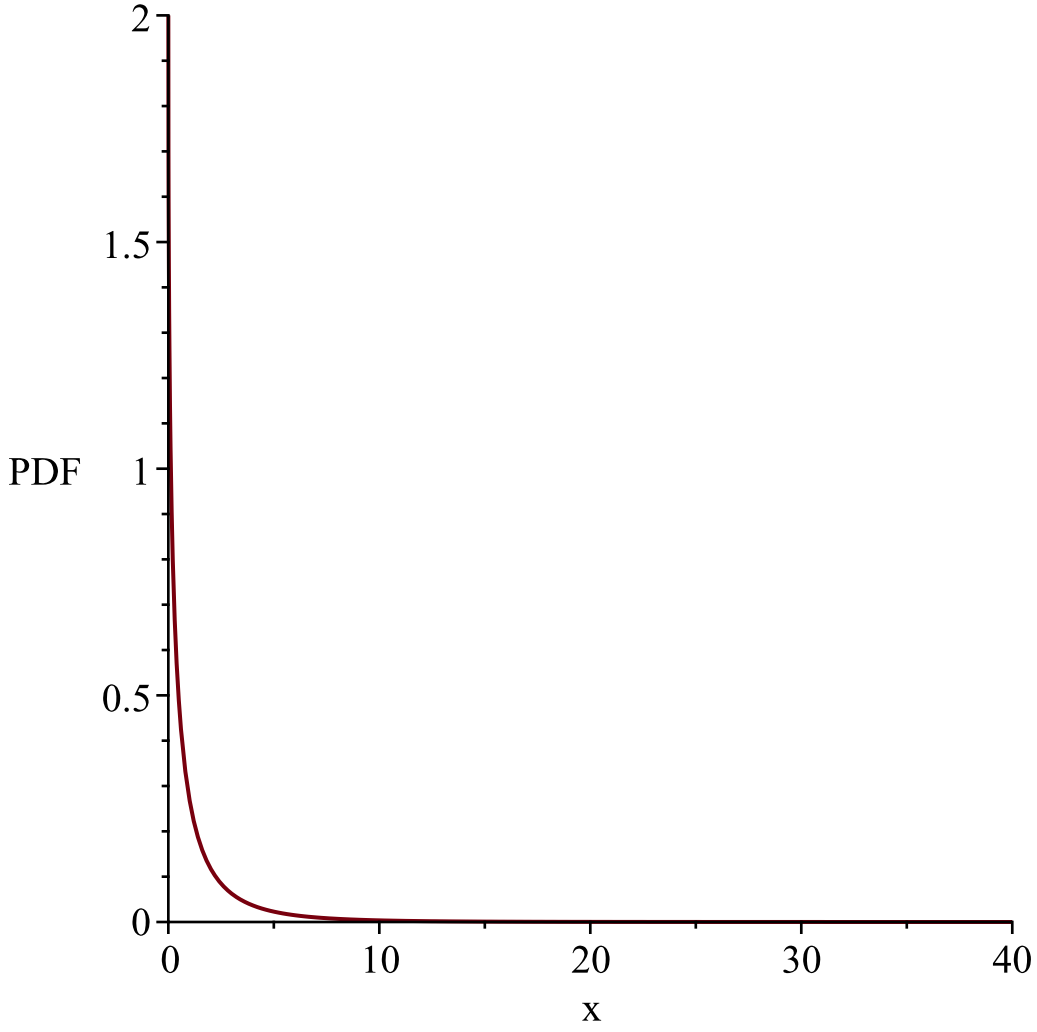
"h(x)", $\frac{2}{2\sqrt{x} + 1}$

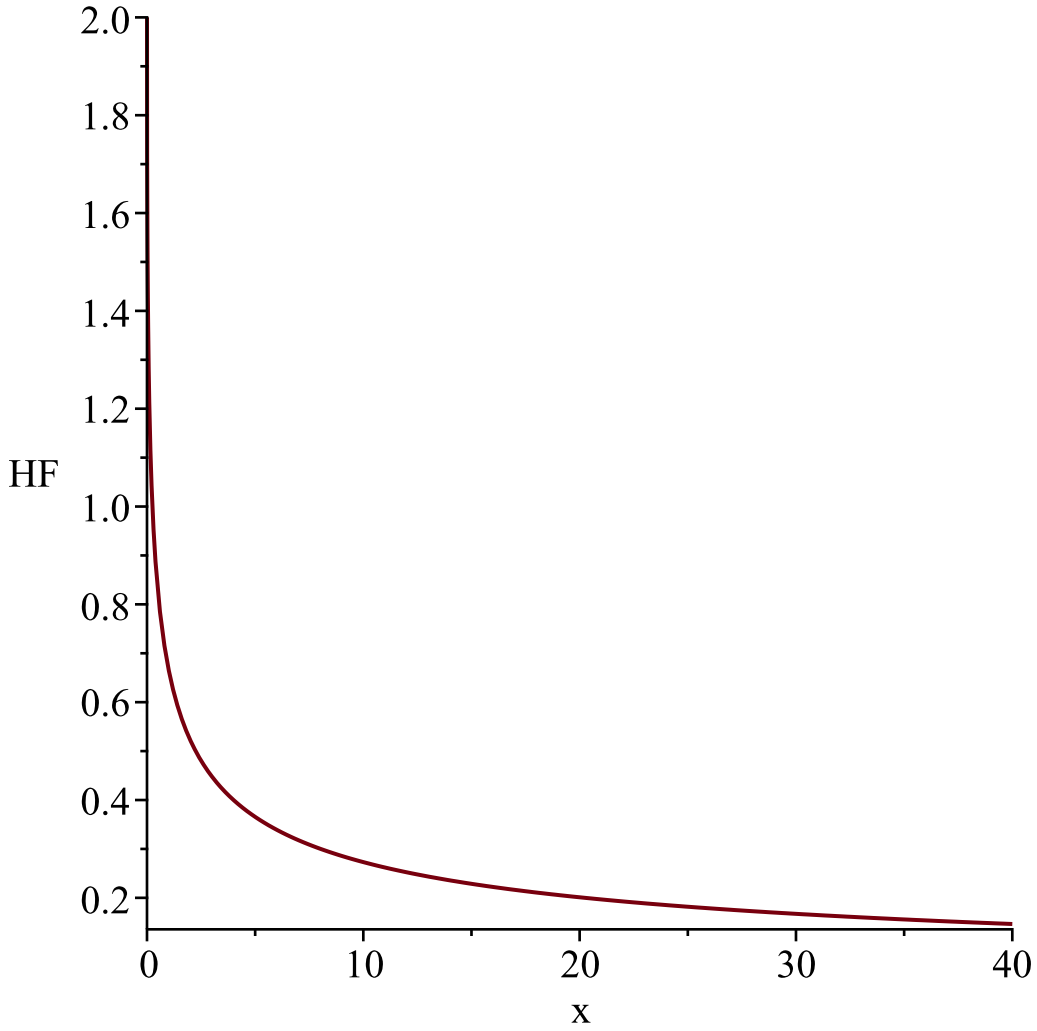
"mean and variance", $\frac{3}{2}, \frac{21}{4}$

$$mf := \frac{2\,\Gamma(r\sim)\,\Gamma\left(r\sim + \frac{1}{2}\right) r\sim^2}{\sqrt{\pi}} + \frac{\Gamma(r\sim)\,\Gamma\left(r\sim + \frac{1}{2}\right) r\sim}{\sqrt{\pi}}$$

"MF", $\frac{2\,\Gamma(r\sim)\,\Gamma\left(r\sim + \frac{1}{2}\right) r\sim^2}{\sqrt{\pi}} + \frac{\Gamma(r\sim)\,\Gamma\left(r\sim + \frac{1}{2}\right) r\sim}{\sqrt{\pi}}$

"MGF", $\lim_{x \to \infty}\left(-\frac{2\left(\sqrt{-t}\,e^{tx - 2\sqrt{x}} - \text{erf}\left(\frac{\sqrt{x}\,t - 1}{\sqrt{-t}}\right)\sqrt{\pi}\,e^{-\frac{1}{t}} - \sqrt{\pi}\,e^{-\frac{1}{t}}\,\text{erf}\left(\frac{1}{\sqrt{-t}}\right) - \sqrt{-t}\right)}{(-t)^{3/2}}\right)$


2
1.5
PDF
1
0.5
0
0
10
20
30
40
x




```
2\,{{\rm e}^{-2\,\sqrt {x}}}
```

"i is", 2,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to 8\, y\sim^{3}\, e^{-2\, y\sim^{2}}\right], [0,\ \infty], ["\text{Continuous}", "\text{PDF}"]\right]$$

"l and u", 0, ∞

"g(x)", $\sqrt{x}$, "base", $4\, x\, e^{-2\, x}$, "GammaRV(2,2)"

"f(x)", $8\, x^{3}\, e^{-2\, x^{2}}$

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

ERROR(IDF): Could not find the appropriate inverse

ERROR(IDF): Could not find the appropriate inverse

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

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

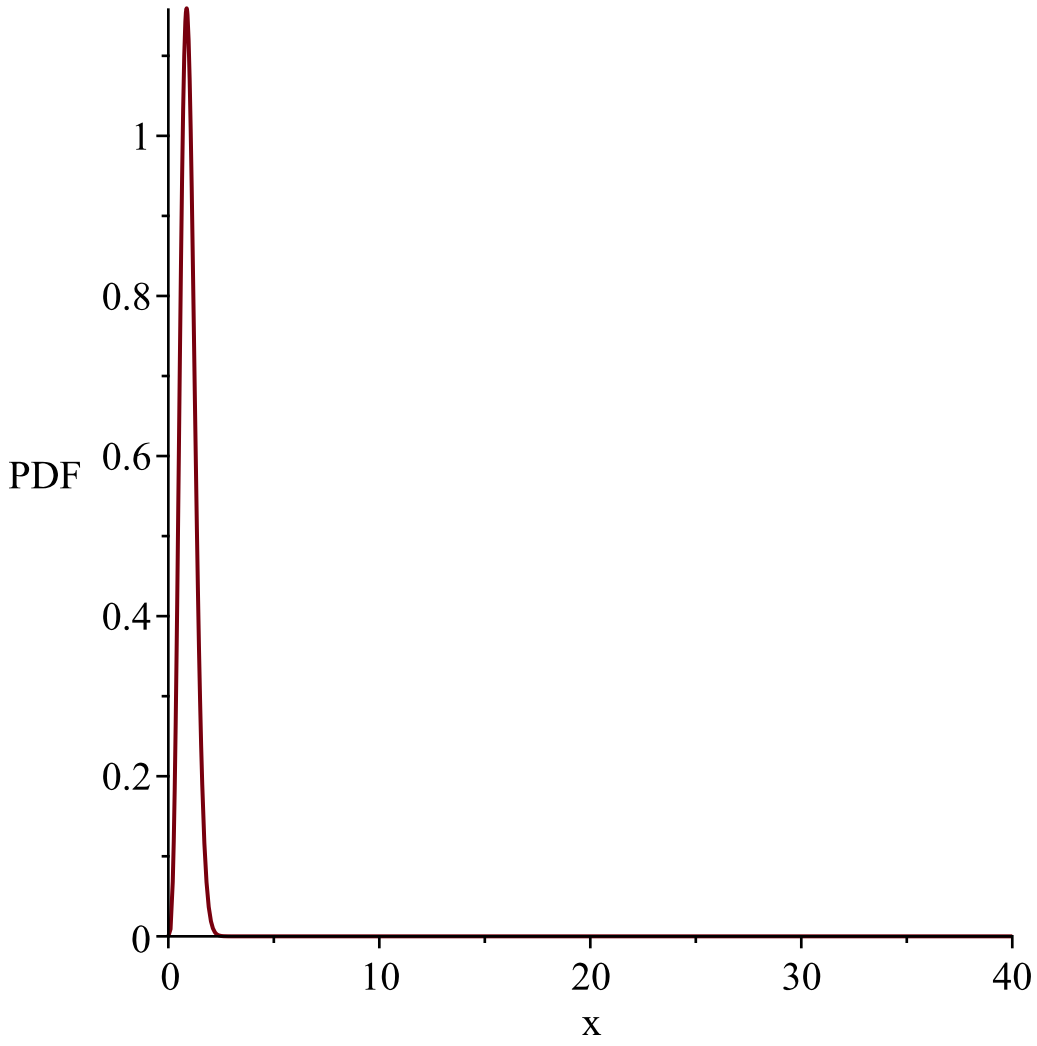
$$\text{"h(x)"},\ \frac{8x^3}{2x^2+1}$$

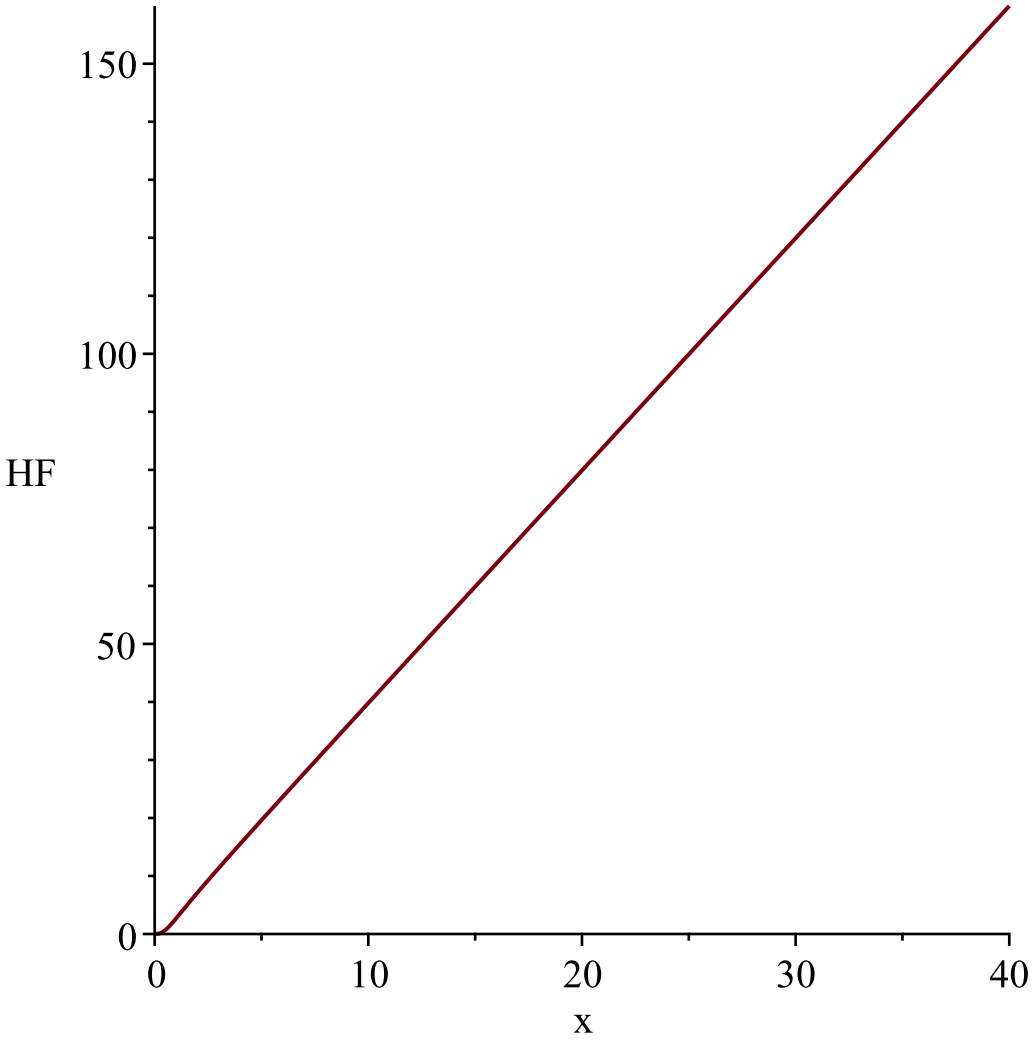
$$\text{"mean and variance"},\ \frac{3}{8}\sqrt{2}\sqrt{\pi},\ 1-\frac{9}{32}\pi$$

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

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

$$\text{"MGF"},\ \frac{1}{8}t^2+\frac{1}{32}t^3\sqrt{\pi}\,e^{\frac{1}{8}t^2}\sqrt{2}\,\operatorname{erf}\left(\frac{1}{4}t\sqrt{2}\right)+\frac{3}{8}t\sqrt{\pi}\,e^{\frac{1}{8}t^2}\sqrt{2}\,\operatorname{erf}\left(\frac{1}{4}t\sqrt{2}\right)+1$$
$$+\frac{1}{32}t^3\sqrt{\pi}\,e^{\frac{1}{8}t^2}\sqrt{2}+\frac{3}{8}t\sqrt{\pi}\,e^{\frac{1}{8}t^2}\sqrt{2}$$






```
8\,{x}^{3}{{\rm e}^{-2\,{x}^{2}}}
```

"i is", 3,

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

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

"g(x)", $\frac{1}{x}$, "base", $4\,x\,e^{-2\,x}$, "GammaRV(2,2)"

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

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

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

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

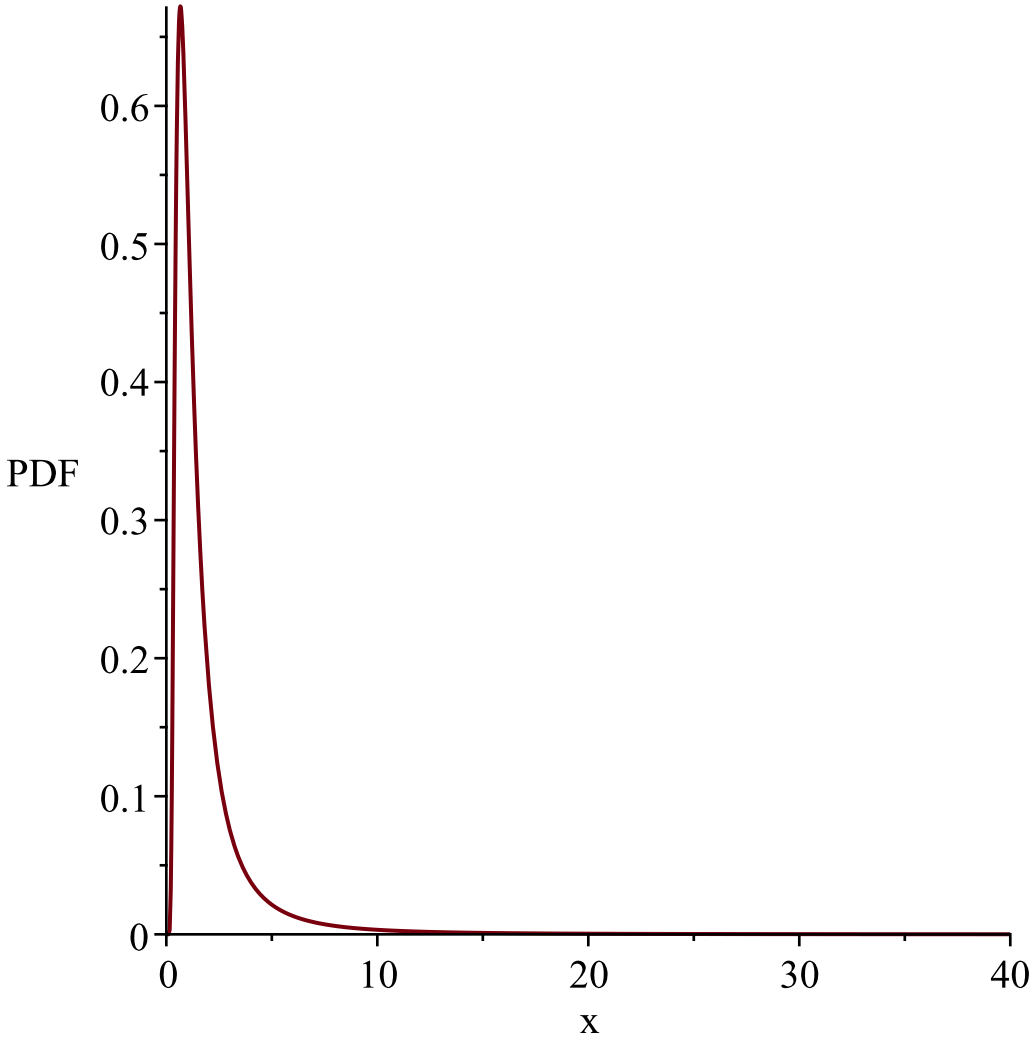
$$\text{"h(x)"},\ -\frac{4\,e^{-\frac{2}{x}}}{x^2\left(e^{-\frac{2}{x}}\,x+2\,e^{-\frac{2}{x}}-x\right)}$$

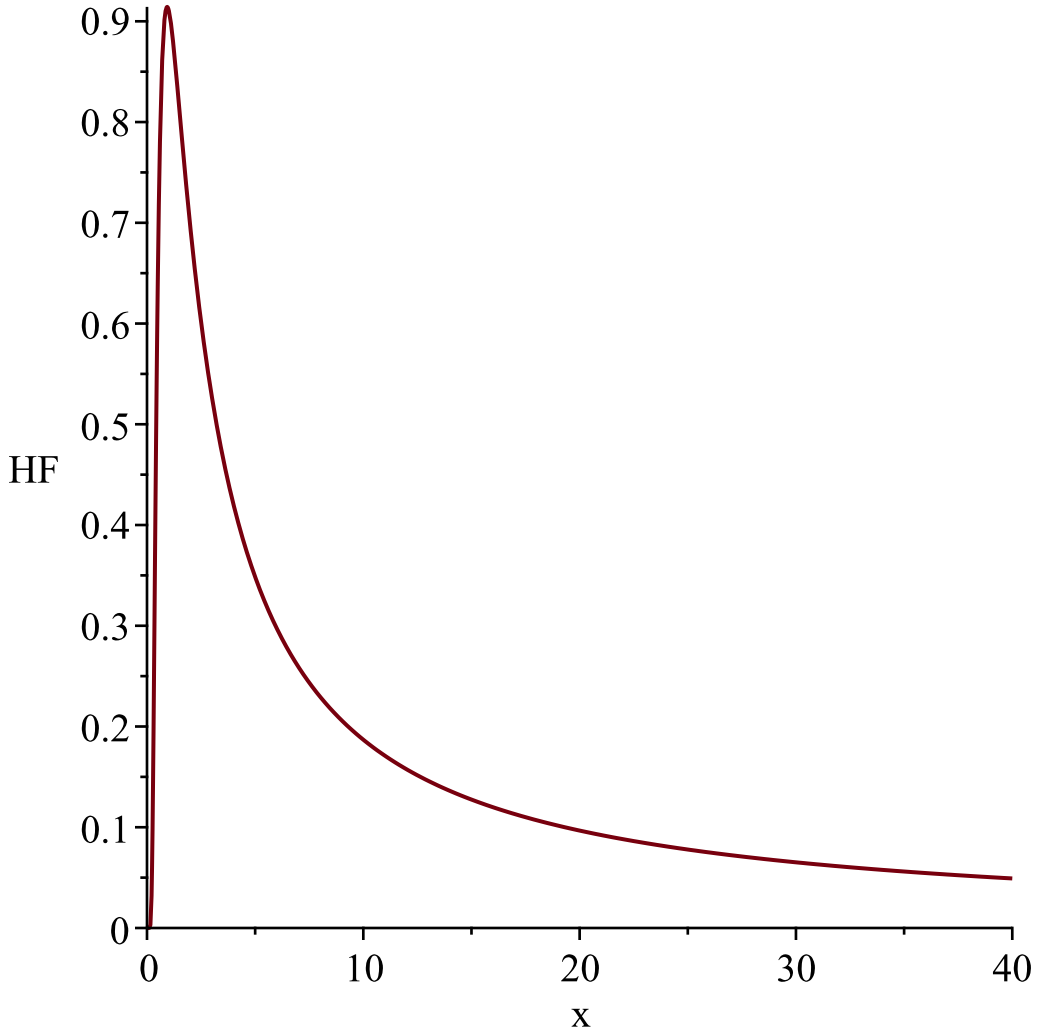
$$\text{"mean and variance"},\ 2,\ \infty$$

$$mf := 2^{r\sim}\,\Gamma(2-r\sim)$$

$$\text{"MF"},\ 2^{r\sim}\,\Gamma(2-r\sim)$$

$$\text{"MGF"},\ -4\,t\,\text{BesselK}\left(0,\,2\sqrt{-t}\,\sqrt{2}\right)+2\sqrt{-t}\,\sqrt{2}\,\text{BesselK}\left(1,\,2\sqrt{-t}\,\sqrt{2}\right)$$






```
4\,{\frac {1}{{x}^{3}}{{\rm e}^{-2\,{x}^{-1}}}}
```

"i is", 4,

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

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

$$l := 0$$

$$u := \infty$$

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

"l and u", 0, ∞

"g(x)", $\arctan(x)$, "base", $4 x\, e^{-2x}$, "GammaRV(2,2)"

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

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

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

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

$$\text{"h(x)"}, \begin{cases} \frac{4\sin(x)}{\cos(x)^2\,(2\sin(x)+\cos(x))} & x \le \frac{1}{2}\,\pi \\ 0 & \frac{1}{2}\,\pi < x \end{cases}$$

$$\text{"mean and variance"}, 4\left(\int_0^{\frac{1}{2}\pi} x\tan(x)\,e^{-2\tan(x)}\left(1+\tan(x)^2\right)dx\right), 4\left(\int_0^{\frac{1}{2}\pi} x^2\tan(x)\,e^{-2\tan(x)}\,(1+\tan(x)^2)\,dx\right)-16\left(\int_0^{\frac{1}{2}\pi} x\tan(x)\,e^{-2\tan(x)}\left(1+\tan(x)^2\right)dx\right)^2$$

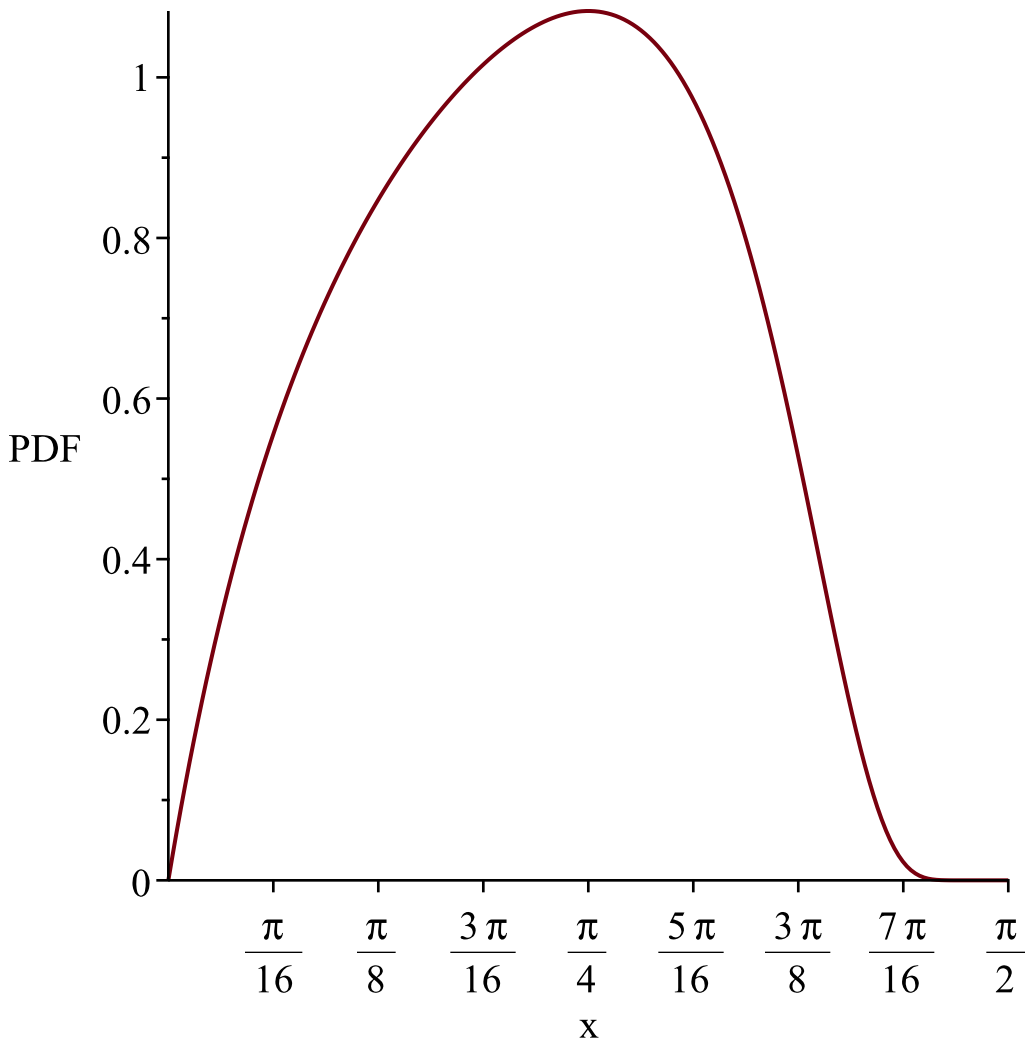
$$mf := \int_0^{\frac{1}{2}\pi} 4\,x^{r\sim}\tan(x)\,e^{-2\tan(x)}\left(1+\tan(x)^2\right)dx$$

$$\text{"MF"}, \int_0^{\frac{1}{2}\pi} 4\,x^{r\sim}\tan(x)\,e^{-2\tan(x)}\left(1+\tan(x)^2\right)dx$$

$$\text{"MGF"}, 4\left(\int_0^{\frac{1}{2}\pi} \tan(x)\left(1+\tan(x)^2\right)e^{t\,x-2\tan(x)}\,dx\right)$$

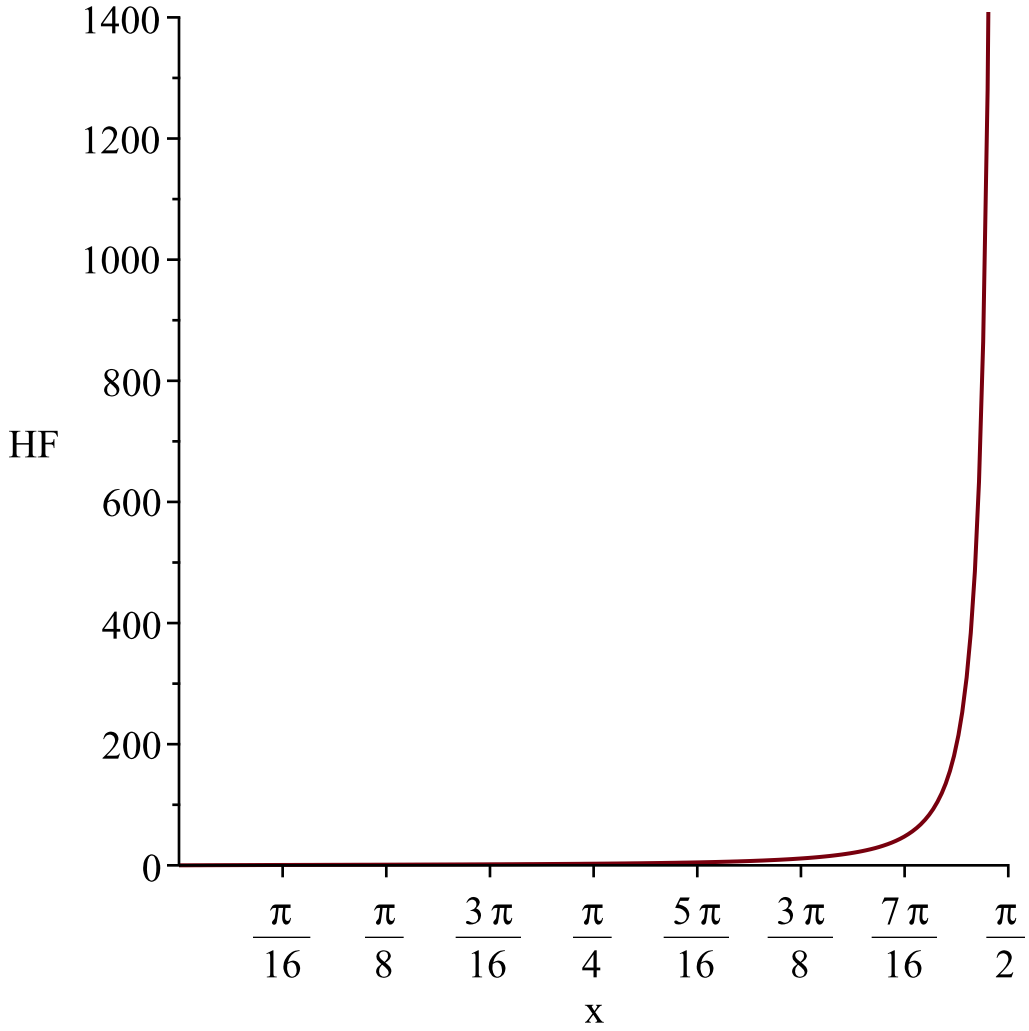
WARNING(PlotDist): High value provided by user, 40 *is greater than maximum support value of the random variable,* $\frac{1}{2}\,\pi$

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




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

"i is", 5,

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

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

$$l := 0$$

$$u := \infty$$

$$Temp := \left[\left[y\sim \to \frac{4 \ln(y\sim)}{y\sim^{3}} \right], [1, \infty], ["Continuous", "PDF"] \right]$$

"l and u", 0, ∞

"g(x)", e^{x}, "base", $4\,x\,e^{-2\,x}$, "GammaRV(2,2)"

"f(x)", $\frac{4 \ln(x)}{x^{3}}$

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

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

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

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

$$\text{"mean and variance"},\ 4,\ \infty$$

Warning, computation interrupted

>