Log-gamma distribution (from http://www.math.wm.edu/~leemis/chart/UDR/UDR.html)
The shorthand $X \sim$ log-gamma(α, β) is used to indicate that the random variable X has the log-gamma distribution with positive scale parameter α and positive shape parameter β. A log-gamma random variable X with parameters α and β has probability density function

$$f(x) = \frac{e^{\beta x} e^{-e^x/\alpha}}{\alpha^\beta \Gamma(\beta)} \qquad -\infty < x < \infty.$$

The probability density function with three different parameter combinations is illustrated below.
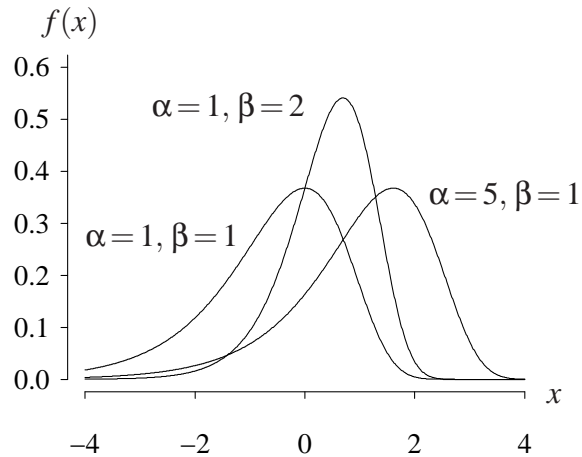
The cumulative distribution, survivor function, hazard function, cumulative hazard function, inverse distribution function, moment generating function, and characteristic function on the support of X are mathematically intractable. The population mean, variance, skewness, and kurtosis of X are also mathematically intractable.

APPL failure: The APPL statements

```
X := [[exp(beta * x) * exp(-exp(x) / alpha) / (alpha ^ beta * GAMMA(beta))],
      [-infinity,infinity],["Continuous", "PDF"]];
Mean(X);
Variance(X);
Skewness(X);
Kurtosis(X);
MGF(X);
```

fails to return the population mean, variance, skewness, kurtosis, and moment generating function.