Suppose u is a uniform random variable in (0,1), and we want a value of X from an exponential distribution.

If X ~ Exponential(θ):

$$F(X) = 1 - e^{-X/\theta}$$

And since u is uniform, u = F(x)

Isolating for x, we have

$$x = -\theta \log(1 - u)$$

or ln