

SIMULATION

1. INVERSE METHOD

Proposition 1.1. *For any distribution function $F(\cdot)$, uniform random variable $u \sim U(0, 1)$. The random variable*

$$X = F^{-1}(u)$$

has distribution F .

Example 1.2. Suppose we want to generate an exponential random variable X with $\lambda = 1$. Since $F(x) = 1 - e^{-x}$. We just need to generate u from $U(0, 1)$ then let

$$x = -\ln(1 - u).$$