Advanced Theory

Survival Analysis 2005

Problem for March 8, 2005

Prove:

If $r = -log[S(t)]$, then $P(R \geq r) = \exp(-r)$.

It helps that we know from probability theory that $S(T) \sim Uniform(0, 1)$. Hence,

$$P(R \geq r) = P(R \geq -log[S(t)]) = P(S(T) \leq \exp(-r))$$

$$\int_0^{\exp(-r)} 1 \; dt = \exp(-r)$$