Ex 5.35 ROSS2014: If $\{N(t), t \geq 0\}$ is a Poisson process with rate λ, verify that $\{N_s(t), t \geq 0\}$ satisfies the axioms for being a Poisson process with rate λ, where $N_s(t) = N(s+t) - N(s)$.

Ex 5.42 ROSS2014: Let $\{N(t), t \geq 0\}$ be a Poisson process with rate λ. Let S_n denote the time of the n-th event. Find

(a) $E[S_4]$,

(b) $E[S_4 | N(1) = 2]$,

(c) $E[N(4) - N(2) | N(1) = 3]$.