Homework-16

Vehicles pass a certain street location according to a Poisson process with rate λ per minute. A woman who wants to cross the street waits until she can see that no vehicle will come in the next b minutes. Find the probability that she does not wait.

Hint: Consider the woman arrives at the spot at time point a (w.r.t. some starting point) and $N(a) = n$, an arbitrary non-negative integer. Then try to represent the event of interest, i.e., no wait, in terms of the Poisson process $\{N(t): t \geq 0\}$. IIP, SIP, and Poisson distribution used in the first definition will then lead to the final answer.