

Late at night Wegman's has only 1 checker at the cash registers. Customers arrive at the checkout line according to a Poisson process at rate 15/hour, and they each take an exponentially distributed amount of time with mean 3 minutes to pay and get their groceries bagged.

1. Let X_t be the number of customers waiting in line at time t . Find its jump rates.
2. What is the stationary distribution of X_t ?
3. Now suppose if a customer arrives when 3 or more people are in line, they give up and goes home. How does your answer for part (b) change?