79. Let X $\sim$ Poisson(θ) and Y $\sim$ Poisson(λ), independent. We used the MGF to show the distribution of $S = X + Y$ is Poisson($\theta + \lambda$).

   (a) Use a bivariate transformation to find the joint PMF of (S, T) where $T = X$. Use the joint PMF of (S, T) to find the PMF of S.

   (b) Prove that the conditional distribution of $T = X$ given $S = s$ is binomial with probability of success $p = \theta/(\theta + \lambda)$.