## Problems from Assignment 1

- 1. Suppose  $X_1, X_2, X_3 \stackrel{\text{iid}}{\sim} \mathscr{B}er(p)$  (that is they are independent and each has a Bernoulli distribution with probability of success p).
  - (a) Find  $P(X_2 = 1)$ .
  - (b) Find  $P(X_1 = 1, X_2 = 1, X_3 = 0)$ .
  - (c) Let  $S = X_1 + X_2 + X_3$ . Find P(S = 0).
  - (d) Find P(S=2)
  - (e) Find P(S=3)
  - (f) Find  $P(S \ge 3)$
  - (g) What distribution does S have? Make sure to give any corresponding parameters.
- 2. Suppose  $X_1, X_2, X_3 \stackrel{\text{iid}}{\sim} \mathscr{P}(\lambda)$  (that is they are independent and each has a Poisson distribution with mean  $\lambda$ ).
  - (a) Find  $P(X_2 = 1)$ .
  - (b) Find  $P(X_1 = 1, X_2 = 1, X_3 = 0)$ .
  - (c) Let  $S = X_1 + X_2 + X_3$ . Find P(S = 0).
  - (d) Find P(S=2)
  - (e) Find P(S=3)
  - (f) Find  $P(S \ge 3)$
  - (g) What distribution does S have? Make sure to give any corresponding parameters.