

ST102/ST109 Class 9 – Additional exercises

1. A fair coin is tossed four times. Let X be the number of heads obtained on the first three tosses of the coin. Let Y be the number of heads on all four tosses of the coin.
 - (a) Find the joint probability distribution of X and Y .
 - (b) Find the mean and variance of X .
 - (c) Find the conditional probability distribution of Y given that $X = 2$.
 - (d) Find the mean of the conditional probability distribution of Y given that $X = 2$.

2. X and Y are independent and identically distributed uniform random variables, taking values 1, 2 and 3 only. Let $W = X + Y$.
 - (a) Find the mean of W .
 - (b) Find the variance of W .
 - (c) Find the moment generating function of W .