

Worksheet 5: Expected value and variance

Example 0.49 (Flip a coin with probability of getting heads equal to p). Let $X = 1$ (heads) or 0 (tails). Find $E(X)$.

Example 0.50 (Toss a fair die). Let X denote the number. Find $E(X)$.

Example 0.51. Let X be a random variable with pmf

$$f(x) = \frac{1}{x(1+x)}, \quad x = 1, 2, \dots$$

Show that the expectation does not exist.

Example 0.52 (Toss a fair die). Let X denote the result. What is $E(X^2)$? $E(e^X)$?

Example 0.53. Find the mean of X which denotes the sum of two independent tosses of a fair die.

Example 0.54 (Toss a coin which gives heads with fixed probability p). Let X denote the numerical outcome: 1 (heads) or 0 (tails). Find $\text{Var}(X)$.

Example 0.55 (Toss 1 fair die). Let X denote the result. Find $\text{Var}(X)$.

Example 0.56. Find the variance of X which denotes the sum of two independent tosses of a fair die.