

IAM 530 2014-2015 Fall

Homework 2

- 1) A game consist of first Rolling an ordinary die once and then tossing an unbiased coin once. The score which consists of adding the number spots on the die and number of heads showing on the coin (0 or 1) is the random variable X. List the possible value of X and tabulate the values of:

- The discrete pdf
- The cdf at its point of discontinuity
- Find $P(X>3)$
- Find the propability of score is an odd integer

- 2) A non-negative integer valued random variable X has a CDF of the form

$$F(x) = \begin{cases} 1 - (1/2)^{x+1} & x = 0, 1, 2, 3, \dots \\ 0 & x < 0 \end{cases}$$

- Find pdf for X
- Find $P(10 < X < 20)$

- 3) A continuous raandom variable X has a pdf given as $f(x) = c(1-x)x^2$ if $0 < x < 1$ and zero otherwise.

- Find the constant c
- Find $E(X)$

- 4) Let X be a continuous random varaible with pdf $f(x) = \begin{cases} 3x^2 & 0 < x < 1 \\ 0 & \text{otherwise} \end{cases}$

- Find $E(X)$, $\text{Var}(X)$
- Find $E(2X+3)$
- Find Skewness and Kurtosis of X

- 5) The pdf of random variable X is given as:
Find $E(X)$ and $\text{Var}(X)$.

x	0	1	2	3	4
P(x)	0.1	0.3	0.3	0.2	0.1

- 6) Following are the published weights (in pounds) of the some of the team members of the San Francisco 49er.

177; 205; 210; 210; 232; 205; 185; 185; 178; 210; 206; 212; 184; 174; 185; 242; 188; 212; 215; 247; 241; 223; 220; 260; 245; 259; 278; 270; 280; 295; 275; 285; 290; 272; 273; 280; 285; 286; 200; 215; 185; 230; 250; 241; 190; 260; 250; 302; 265; 290; 276; 228; 265.

- Find mean and Standard deviation of the weights.
- Organize the data from smallest to largest value.
- Find the median and mode.
- Find the first quartile (25%)

7) There are two securities in the market. The following chart shows their possible payoffs. What are the co-variances and correlations between these securities?

State	Probability of Outcome	Return on Security 1	Return on Security 2
1	0.10	0.25	0.25
2	0.40	0.20	0.15
3	0.40	0.15	0.20
4	0.10	0.10	0.10