

Statistics and Mathematics Notes

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Contents

About	5
I Statistics	7
Statistics	9
II Probability	11
1 Random variable	13
1.1 List of probability distributions	13
1.2 Discrete distributions	13

About

This website contains notes on statistics and mathematics. These are chiefly meant for being used as reference materials, which, together with the lecture slides, make for a more matured system of learning.

- See the lecture presentations [here](#)

This website is created with the help of `Rstudio` IDE using the R package `bookdown`.

****If you find any mistakes or have any suggestions, please let me know**

You can learn more about me [here](#) and about my writings on statistics, data science, and linux [here](#).

Part I

Statistics

Statistics

Contents

Part II

Probability

Chapter 1

Random variable

1.1 List of probability distributions

1.2 Discrete distributions

Probability Mass Functions (PMF)

1. $P(x) = \frac{1}{14}(a + 2x); x = -3, -2, -1, 0, 1, 2, 3$
2. $P(x) = k(x - 2); x = 3, 4, 5, 6, 7, 8$
3. $P(x) = \frac{x-1}{k}; x = 2, 3, 4, 5$
4. $P(x) = \frac{3-|4-x|}{k}; x = 2, 3, 4, 5, 6$
5. $p(x) = \frac{x+4}{30}; x = 0, 1, 2, 3, 4$
6. $P(x) = \frac{2x+k}{56}; x = -3, -2, -1, 0, 1, 2, 3$
7. $P(x) = \frac{x+1}{k}; x = 1, 2, 3, 4$

1.2.1 Continuous

Probability Density Functions (PDF)

1. $f(x) = 2x; 0 < x < 1$
2. $f(x) = \frac{1}{30}(3 + 2x); 2 < x < 5$
3. $f(x) = ax^2; 0 < x < 4$
4. $f(x) = kx^2 + kx + \frac{1}{8}; 0 < x < 8$
5. $f(x) = kx; 0 < x < 4$
6. $f(x) = 3x^2; 0 \leq x \leq 1$
7. $f(y) = k(3y + 5); 1 < y < 5$
8. $f(z) = \frac{2}{9}(3z - z^2); 0 \leq x \leq 3$

1.2.1.1 Joint PDF

1.

$$f(x, y) = 8xy; 0 < x, y < 1$$

2.

$$f(x, y) = \frac{3}{2}(x + y); 0 < x, y < 1$$

3.

$$f(x, y) = 4x(1 - y); 0 < x, y < 1$$

4.

$$f(x, y) = 6xy^2; 0 < x, y < 1$$