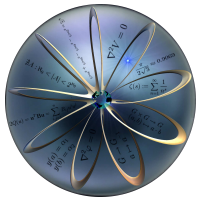

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discrete density function

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Let X be a discrete random variable. The function $f_X : \mathbb{R} \to [0, 1]$ defined as $f_X(x) = P[X = x]$ is called the *discrete probability function* of X. Sometimes the syntax $p_X(x)$ is used, to mark the difference between this function and the continuous density function.

If X has discrete density function $f_X(x)$, it is said that the random variable X *has the distribution* or *is distributed* $f_X(x)$, and this fact is denoted as $X \sim f_X(x)$.

Discrete density functions are required to satisfy the following properties:

- $f_X(x) \geq 0$ for all x
- $\sum_x f_X(x) = 1$