Probability and Statistics (MA6.101)

Monsoon 2021, IIIT Hyderabad
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Probability

Continuous Random Variables (contd.)

Note that when finding the probability, it does not matter whether we use $<$ or $\leq$, *i.e.* $P(X < a) = P(X \leq a)$ for any a.

Since the PDF is the derivative of the CDF, we can also say

$$F_X(x) = \int_{-\infty}^{x} f_X(u)du$$

and

$$P(a < X \leq b) = F_X(b) - F_X(a) = \int_{a}^{b} f_X(u)du$$

The expectation of a continuous random variable is

$$E[X] = \int_{-\infty}^{\infty} x f_X(x)dx$$

The variance is defined in terms of expectation as $E[(X - \mu_X)^2]$.