expected value of a continuous random variable

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Let X be a continuous random variable with pdf $f(x)$. The expected value $E(X)$ is calculated as a weighted integral

$$E(X) = \int_{-\infty}^{\infty} xf(x)dx$$

Let X be a continuous random variable with pdf $f(x)$. If $h(X)$ is any real-valued function of X then we can calculate an expected value for that as

$$E(h(X)) = \int_{-\infty}^{\infty} h(x)f(x)dx$$

variance of a continuous random variable