

**tags:**    probability-theory

State and prove the smoothing property
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Law of total expectation: Let  $X$  be a random variable with expected value  $\mathbf{E}(X)$ ; let  $Y$  be any random variable defined on the same probability space, then

$$\mathbf{E}(X) = \mathbf{E}(\mathbf{E}(X|Y))$$