Welcome Tutorial :-)
Tutorial 1

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- 1. Let X be a random variable and $P(X = k) = p(1 - p)^{k-1}$, where $k = 1, 2, \cdots$. Please compute $E(X)$ and $Var(X)$.

- 2. Given two random variables X and Y, covariance is a measure of how much X and Y change together, defined as $Cov(X, Y) = E(X - E(X))(Y - E(Y))$. Please prove the following statements:
  - a. $Cov(X, Y) = E(XY) - E(X)E(Y)$.
  - b. $Cov(X, a) = 0$, where a is a constant.
  - c. $Cov(aX + c, bY + d) = abCov(X, Y)$
  - d. $Cov(X, Y) = 0$ if X and Y are independent.

- 3. Estimate a Naive Bayes model with Gaussian features using Maximum Likelihood. [Optional] Evaluate this model on the Iris data (You can find the training and testing dataset from following URL: http://archive.ics.uci.edu/ml/datasets/Iris)