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Quantization for probability distributions concerns the best approximation of a probability measure  $P$  defined on a metric space by a measure supported on a finite number of points, or in other words, the best approximation of a  $d$ -dimensional random vector  $X$  with distribution  $P$  by a random vector  $Y$  with at most  $n$ -values in its image. In this paper, we present an efficient numerical method for high precision computation of the optimal sets of  $n$ -means and the  $n^{\text{th}}$  quantization errors for different values of  $n$  for some common univariate absolutely continuous distributions. (Received July 31, 2017)