

In the present work we study a stochastic differential equation with coefficients continuous in x having in this variable linear growth. As a main result we show that there exists a weak solution to this equation by a new, more elementary method. Standard methods are based either on the concept of the weak solution or equivalently on solving a martingale problem. However, both approaches employ the integral representation theorem for martingales, whose proof becomes rather complicated in dimension greater than one. By a simple modification of the usual procedure, one can identify the weak solution elementary, with no need to apply the above mentioned theorem. In the preliminaries we summarize some auxiliary results: namely, some properties of the space of continuous functions as the space of trajectories are established and an important theorem which allows us to approximate continuous function by functions Lipschitz continuous is proved.