One major task mathematical finance sets itself is modeling, pricing and calibration of financial instruments. (Semi)martingale theory is used for modeling and derivative prices are written as conditional expectations. Typically, the latter are not available in closed form and, thus, computational methods become necessary. Essentially three approaches to compute the expectations are being used: Monte Carlo simulation, Fourier based valuation methods and the representation of prices as solutions of partial integro-differential equations (PIDEs). In this context we focus on Galerkin methods for solving PIDEs arising in Lévy models. We classify Lévy processes according to the solution spaces of the associated parabolic PIDEs and give a relation to the Blumenthal-Getoor index. Furthermore, we derive Feynman-Kac representations of variational solutions. We discuss applications to option pricing and give an outlook on a calibration procedure.