INTISARI

KAJIAN TEORITIK FUNGSI RAPAT PELUANG BAGI GERAK BROWNIAN GEOMETRIK LINEAR DAN NONLINEAR

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Telah dilakukan kajian teoritik gerak Brownian geometrik linear maupun nonlinear dan fungsi rapat peluangnya. Fungsi rapat peluang bagi gerak Brownian geometrik dilakukan dengan menyelesaikan persamaan Fokker-Planck padanan bagi gerak Brownian geometrik linear dan non linear. Fungsi rapat peluang gerak Brownian geometrik linear dengan bagian drift konstan tidak memiliki fungsi rapat peluang yang berlaku pada seluruh x dan t, sedangkan fungsi rapat peluang Brownian geometrik non linear berlaku pada seluruh x dan t dengan nilai nonlinearitasnya bergantung pada proses pengintegralan yang digunakan.

Kata kunci: Persamaan diferensial stokastik, gerak Brownian geometrik, persamaan Fokker-Planck, fungsi rapat peluang (PDF).

ABSTRACT

THEORETICAL STUDY OF PROBABILITY DENSITY FUNCTION FOR LINEAR AND NONLINEAR GEOMETRIC BROWNIAN MOTION

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A theoretical study of linear and nonlinear geometric Brownian motion and its probability density function has been conducted. The probability density function for geometric Brownian motion is done by solving the equivalent Fokker-Planck equation for linear and non-linear geometric Brownian motion. The probability density function of linear geometric Brownian motion with a constant drift part does not have a probability density function that applies to all x and t. The non-linear geometric Brownian have a probability density function that applies to all x and t with the value of its non linearity depends on the integration process used.

Keywords: Stochastic differential equation, Geometric Brownian Motion, Fokker-Planck equation, Probability Density Function (PDF)