

Name _____

Wealth in Equations: How Differential Equations Shape Economics and Finance

Open-Ended Response Answer Key

1. The Solow-Swan model uses differential equations to describe the evolution of capital, labor, and technology in an economy over time, helping economists analyze the long-term dynamics of economic growth and identify policies for sustainable development.
2. Financial analysts use the Black-Scholes model to estimate the fair value of options by solving its partial differential equation, allowing them to make informed decisions about buying, selling, or hedging against risk in financial markets.
3. It is important for financial analysts to model risk and uncertainty using stochastic differential equations to assess the potential fluctuations in asset prices and manage investment portfolios effectively, especially in volatile market conditions.
4. Financial managers use the Markowitz mean-variance model to construct diversified portfolios that balance risk and reward by finding the optimal mix of assets based on their expected returns and correlations, helping investors achieve their financial goals while minimizing risk.

