

END OF CHAPTER EXERCISES

Chapter 17 : Asset Price Dynamics

Financial Engineering : Derivatives And Risk Management

(Keith Cuthbertson, Dirk Nitzsche)

1. What are the basic characteristics of a Wiener process?
2. Why is the BOPM (and other 'tree methods') more flexible than closed form solutions such as the Black-Scholes formula for calls and puts?
3. What are the key strengths and weaknesses in calculating option premia using finite difference methods?
4. What is a stochastic differential equation, SDE ? Give a simple example.
5. What is a partial differential equation, PDE? Give a simple example. What is the key difference between a SDE and a PDE ?
6. In the context of the *one-period* BOPM, what is a risk-neutral probability ? Show that this risk-neutral probability is consistent with the assumption that the underlying asset S grows at the risk-free rate.
7. Carefully explain the steps used to price a European put option using Monte Carlo simulation (MCS).