Quant Job Interview Questions And Answers

Second Edition

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- In the Black-Scholes world, price a European option with payoff of
$$max(S^2 - K, 0)$$
at time T.

- Develop a formula for the price of a derivative paying
$$max(S \times (S - K), 0)$$
in the Black-Scholes model.

- Prove that the implied vol of a put and the implied vol of a call (with the same strike) are the same.

- What happends to the price of a vanilla call option as volatility tends to infinity?

- In the pricing of options, why doesn't it matter if the stock price exhibits mean reversion?

- Prove that the price of a call option is a convex function of the strike price.

- What is a butterfly?

- Suppose an option pays zero if spot is less than 100, or pays spot minus 100 for spot between 100 and 120 and 20 otherwise. Synthetise the option from vanilla options.

- A derivative pays
$$\frac{1}{min(max(S, K_1), K_2)},$$
with $K_1 < K_2$. Derive a model independent hedge in terms of a portfolio of vanilla options.

- All being equal, which option has higher Vega? An at-the-money European call option with spot 100 or an at-the-money European call option with spot 200?