CQF Module 3.4 Volatility

1. Consider two European call options A and B with the following information:

Option	Strike price	Expiration (months)	Market price of option
A	25	6	3.29
B	30	6	0.64

a) The underlying is 27, there are no dividends and the risk-free interest rate r is 5%. Estimate the implied volatility σ_{imp} for both options.

b) Calculate delta , gamma and vega for each option.

c) Now set up a portfolio that is delta and gamma neutral and will profit if both implied volatilities fall by the same amount. How much return will be made?

2. Using market data for European options with the same expiry but different exercise prices, find and plot the implied volatilities. What shape does the plotted curve have?