

## Worksheet 5

There is a quiz to test basic understanding available on Keats.

1) [✱] By adapting the code given in the lectures, compute the 99%-profit-price for traders A, B and C (as described in the lectures).

(Solution: see the file `compute99ProfitPrices.m` in `lecture5.zip`)

2) [✱] Reproduce the histogram of expected payoff when the trader charges the Black Scholes price and then uses delta hedging.

(Solution: see the file `testSimulateDeltaHedging.m` in `lecture5.zip`)

3) [✱] Generate a log-log plot of the relative error of the delta hedging strategy against the number of steps.

(Solution: see the file `plotHedgingError.m` in `lecture5.zip`)

4) Generate a log-log plot of the relative error of the delta hedging strategy against the number of steps with proportional transaction costs. Use the bid ask spread from market data. Are your call option prices within the market's bid ask spread for call option prices?

(Solution: see the file `plotHedgingErrorTxCosts.m` in `lecture5.zip`)

5) [✱] Compare the indifference prices obtained for the three different trading strategies A, B and C when using exponential utility with risk aversion parameter  $a = 1$ .

(Solution: see the file `computeIndifferencePrice.m` in `lecture5.zip`)

6) [✱] Use the `fzero` function to write a `computeImpliedVolatility` function. Write a test for your function.

(Solution: see the file `computeImpliedVolatility.m` in `lecture5.zip`)

7) [✱✱] May 2014, Q3

8) May 2015, Q2

9) May 2015, Q2