MSF 526
Illinois Institute of Technology
Homework 1
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Root Finding and Implied Volatility

During this programming assignment we explored Black Scholes pricing model for finding values of the options and their Greeks. We also explored two computational methods for root finding – Newton's and Bisection. Then we applied Black Scholes model and root finding methods to find implied volatility of the option.

From the experiments it is clearly noticeable that the convergence is significantly better for Newton's method. This method finds the root faster and with better precision.

The performance of the algorithms was the best for At Then Money (ATM) options and Near The Money. The number of iterations needed to compute the root grew for ITM and it was more noticeable for Bisect method. The same effect was noticed for OTM options. For very deep ITM and OTM options the computational methods started failing.