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Assignment 5—American Options

Everybody is going to do this assignment individually.
Read sections 3.6 and 4.6 in Tools for Computational Finance.
Also read the article

S. IKONEN AND J. TOIVANEN: Operator Splitting Methods for American Option Pricing, *Applied Mathematics Letters*, Volume 17, Issue 7, 2004, pp. 809–814.

The basic level of the assignment is:

1. Write a 1–2 page summary about numerical solution methods to price American options. The summary shall cover the different methods that you have read about above.

The advanced level of the assignment is:

1. Write a 1–2 page summary about numerical solution methods to price American options. The summary shall cover the different methods that you have read about above.

2. Implement a finite difference solver to price American options. Implement both PSOR and the operator splitting method presented in the article and compare them. Note that in the first line of equation (10) the signs in front of λ should be the opposite when implementing the operator splitting method (it's a typo in the article). Write a report with your obtained results. If you need tutoring regarding this part you can book your time slot here https://doodle.com/meeting/participate/id/dRoAQvze.

Your assignment should be handed in through the Student Portal no later than October 23. Those who are doing the advanced level will meet Elisabeth Larsson or Filip Marttala for ten minutes to present your work and your report orally. This should be done no later than October 31.

Good luck with Assignment 5!