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Introduction

This report is a two part study of:

I) Pricing a convertible bond contract in which, **at expiry** T the holder has the option to choose between receiving the principle F or alternatively receiving R underlying stocks with price S

II) An extension to the above contract where the holder is able to exercise the decision to convert the bond in stock at **any time before** the maturity of the contract. This is known as an American embedded option

through the use of advanced numerical methods such as Crank-Nicolson with PSOR.

Task 2.1

This task consisted in valuing a portfolio comprising of shorting a call option with strike price X_1, longing a call option with strike price X_2, longing $2X_2$ binary cash or nothing call options with strike price X_2 and unit payoff and longing a call option with strike price equal to zero with parameters: