S1. A binary call option pays b dollars if Fly High Airlines stock price (FHA) after a time T (in years) exceeds K dollars. The current FHA value is S_0. FHS follows a geometric Brownian motion with annual volatility σ. The risk-free interest rate is r per year. Find a formula giving the price of this FHA binary call option, C_b, as a function of b, T, K, S_0, σ, and r.

S2. Tesla stock price (TSLA) closed yesterday at $188.14. Find the price of a European call option on TSLA with a strike price of $190 and maturity three months. The annual volatility of TSLA is 48%, and the yield of the three-month US treasury bill is 5.48% (per year).