# **SOLUTION TO QUESTION 1B**

**Notations**

S - Stock price = $40

K - Exercise price = $45

τ - Time to expiration = 4 months = years

r - Risk-free rate of return = 3% per year = 0.03

σ - Stock return standard deviation (volatility of returns) = 40% per year = 0.4

e - Exponential Term

N(x) - Cumulative distribution function of the standard normal distribution

C - Call option price

To determine the call price, **C**:

Therefore, the Black-Scholes call price is **2.023617**