University of Texas at Austin

Warm-up worksheet
Prep for subjective probabilities.

Provide your complete solution for the following problem(s):

Problem 0.1. (5 points) Consider a non-dividend-paying stock currently priced at $100 per share. The price of this stock in one year is modeled using a one-period binomial tree under the assumption that the stock price can either go up to 120 or down to 80. Let the continuously compounded, risk-free interest rate equal 0.04. What is the price of a one-year, at-the-money call option on the above stock?

Problem 0.2. (10 points)
The current price of a non-dividend-paying asset is $100 per unit. Bertram Wooster decides to model the price at the end of the single one-year period so that it can either increase by $10 or decrease by $10. He calculates the price of a one-year, at-the-money European call option and gets $11.30. Jill Mariner shows up and suspects that Bertram had been a tad too optimistic in setting up the price at the down node in his model. She is of an opinion that the model needs to be changed so that the price can decrease by $20. This is the only part of Bertram’s model she objects to.

What is the price of a one-year, at-the-money European call option according to Jill?