Question: What is the price of a digital option with strike 110 (spot=100), maturity T, assuming a normal distribution of S and no interest rates ?

First if we assume a normal distribution of S with no interest rates, we have:

so follows a normal distribution with mean and variance .

Therefore, the price of the digital option is: with . This is the same as with .

Let’s say the maturity is one year and the volatility is 20%, giving as we are already using percentage.

This gives a price of .