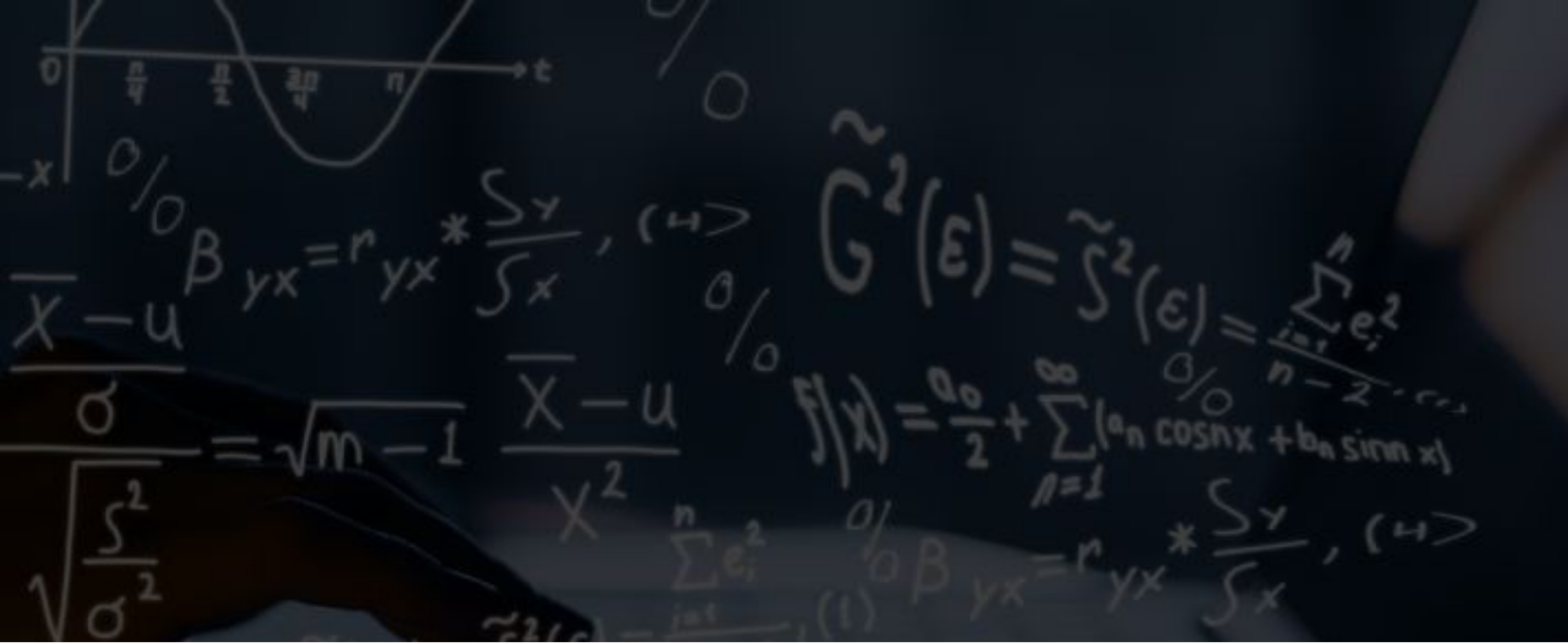

Calculation 3 - Black-Scholes

David Simbandumwe | DATA 618 Fall 2023 w8

Calculation 3: Black-Scholes

The Black-Scholes model, also known as the Black-Scholes-Merton (BSM) model, is a mathematical model used to determine the fair prices of options contract.

$$Call = S_0 N(d_1) - N(d_2) K e^{-rT}$$

$$Put = N(-d_2) K e^{-rT} - N(-d_1) S_0$$

where:

$$d_1 = \frac{ln(\frac{S}{K}) + (r + \frac{\sigma^2}{2})T}{\sigma\sqrt{T}}$$

$$d_2 = d_1 - \sigma\sqrt{T}$$

S : current asset price

K: strike price of the option

r: risk free rate

T : time until option expiration

σ: annualized volatility of the asset's returns

- https://www.codearmo.com/python-tutorial/options-trading-black-scholes-model

Results

Summary		
Variables	Stock	PEX
	Option Expiration	01-01-2024
	Strike Price Call	$ 30.00
	Strike Price Put	$ 30.00
Prices	Call Option	$ 0.0156
	Put Option	$ 29.3288