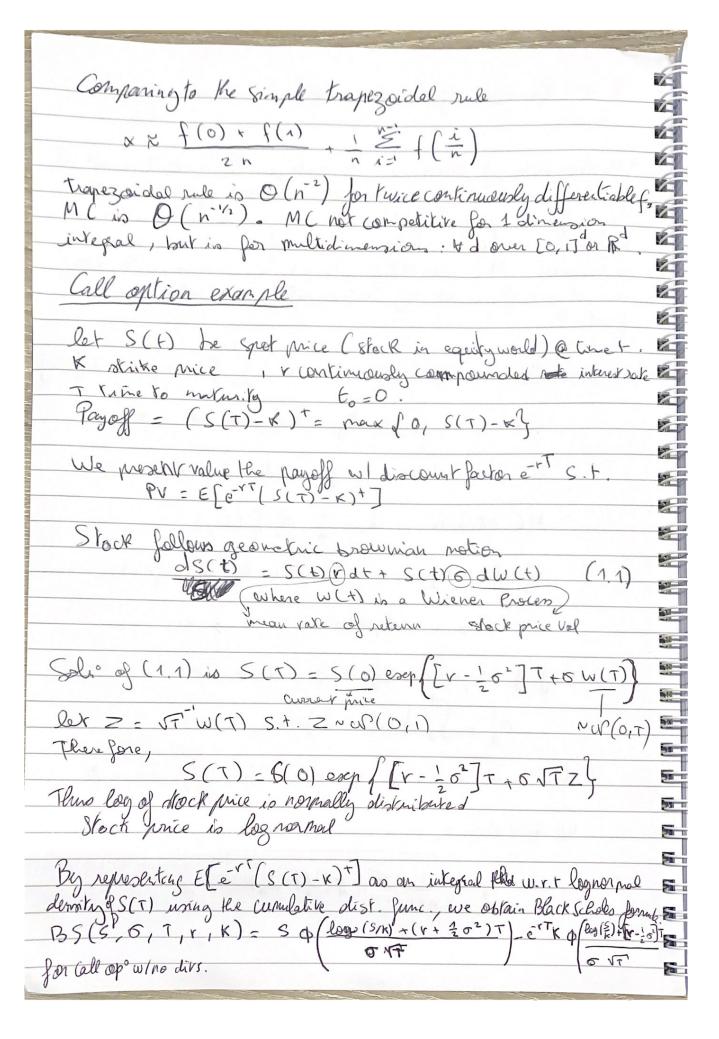
1. 1. Principles of Monte Carlo \* Mathematics of meanine formalizes the intuitive us of proba, associating an event who set of outcomes & defining the proba of the event to be its volume measure relative to that measure of a universe of possible outcomes. MC uses this identity in reverse, calculating the volume of a set by interpreting the volume as a Consider a force of s.t. x = [f(n) dn == E[f(u)] where U is uniformly distributed by 0 & 1 let U, Uz. draws uniform independant E [0,1] MC estimate is an = 1 & f(U) if fintegrable over [0,1], by law of large ups we have ân > « w/ proba 1 as n > if I square integrable and we set  $6_1^2 = \int_0^2 \left( f(x) - \alpha \right) dx$ then error 2, - a is approx v cr (o, 5) when n? We don't know of or a but can estimate wring sample of the  $= \sqrt{\frac{1}{h-1}} \sum_{i=1}^{h} \left( f(V_i) - \hat{\lambda}_n \right)^2$ 



Therefore, the manke Carlo algo of so compute E[e\*\*[S(1)-K\*], arouning a call opo w/ no dividends and arouning we can produce the a sequence Z, Z, ..., is: N Set  $S_{i}(T) = S(0) \exp \left\{ \left( r - \frac{1}{2} \sigma^{2} \right) T + \sigma Z_{i} V T \right\}$ Set  $C_{i} = e^{-rt} \left( S(T) - \kappa \right)^{t}$ Set  $\hat{C}_{n} = \left( C_{2} + ... + C_{n} \right) / n$ -