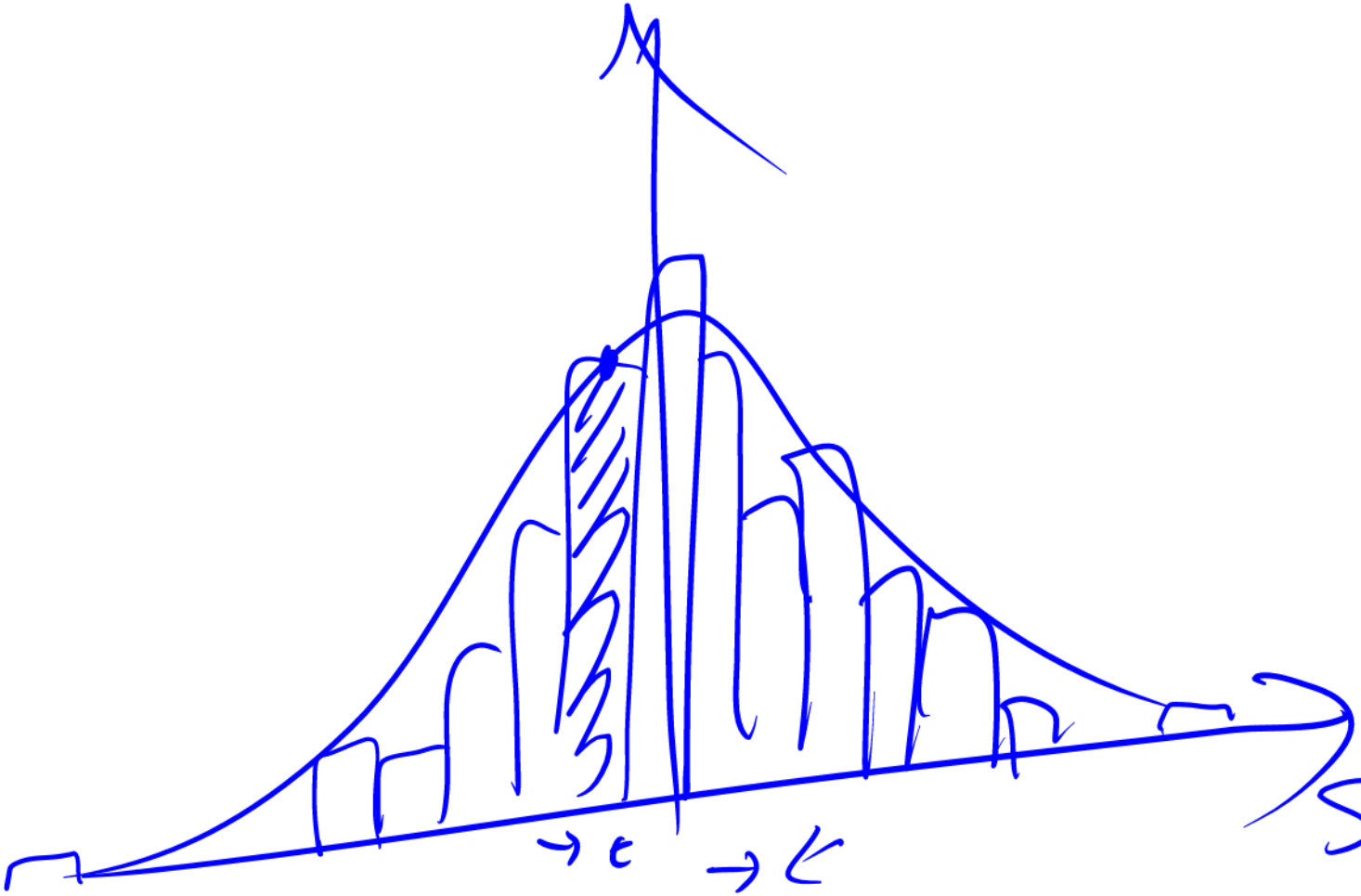
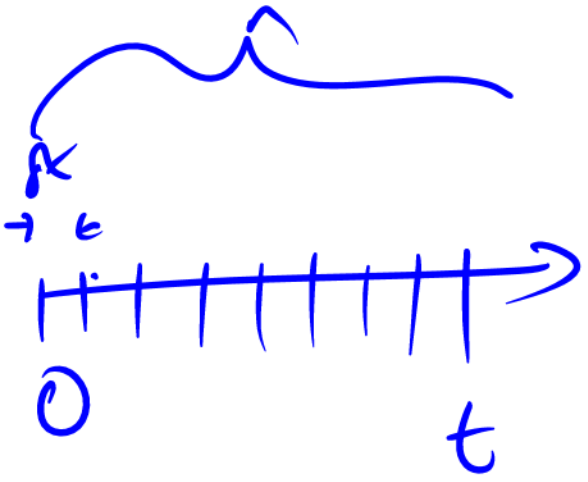

ε
Scaled
Rtns

mean $= \mu \delta t^{\alpha}$



$S_1 = S_0(1 + \mu \delta t^{\alpha})$

$S_2 = S_0(1 + \mu \delta t^{\alpha})^2$

$S_n = S_0(1 + \mu \delta t^{\alpha})^n$ $\qquad n \cdot \delta t = t$

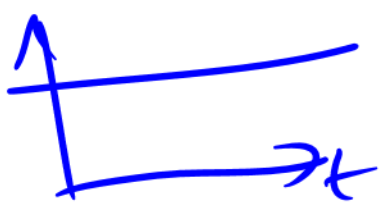
$S_n = S_0(1 + \mu \delta t^{\alpha})^{t/\delta t}$

$= S_0 \exp\left(\frac{t}{\delta t} \ln(1 + \mu \delta t^{\alpha})\right)$

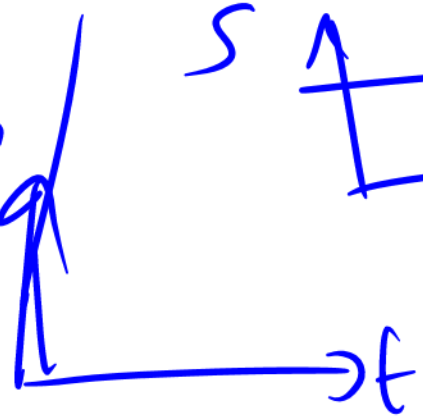
$\approx S_0 \exp\left(\frac{t}{\delta t} \mu \delta t^{\alpha} + \cdots\right)$

$$S(t) = S_0 \exp\left(\mu t - \delta t^{\alpha-1}\right)$$

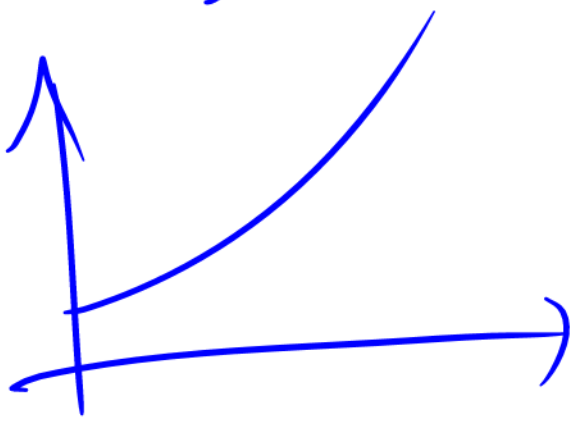
1. $\alpha > 1$ $\lim_{\delta t \to 0} \delta t^{\alpha-1} = 0$ $S(t) = S_0 e^0 = S_0$



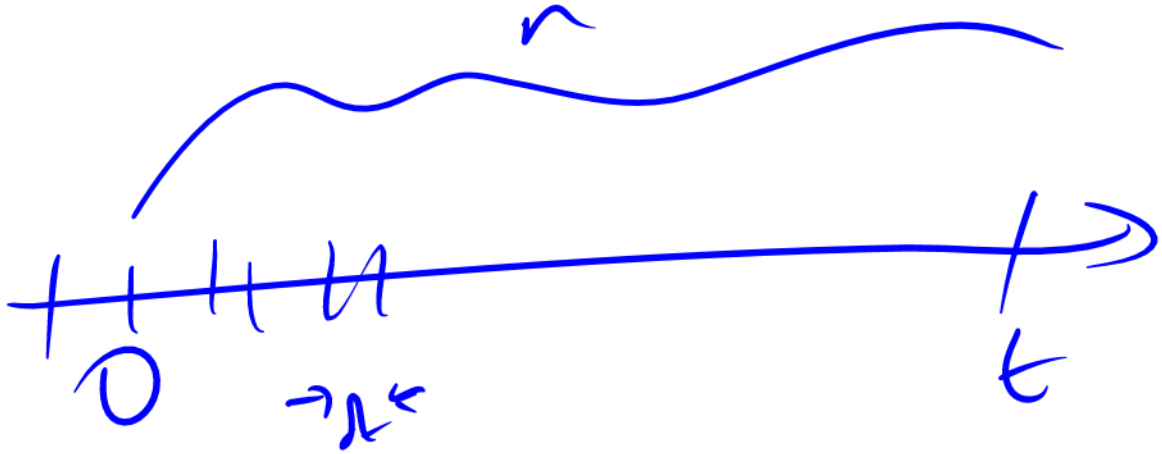
2. $\alpha < 1$ $\lim_{\delta t \to 0} \delta t^{\alpha-1} = \infty$



3. $\alpha = 1$ $\lim_{\delta t \to 0} \delta t^{\alpha-1} = 1$ $S(t) = S_0 e^{\mu t}$



$r_{\Delta t} = \sigma \Delta t^{\beta}$



$\sigma \Delta t^{\beta}$

$\left.\begin{array}{l} \\ \\ \\ \end{array}\right\} n$

$\mathrm{Var} = \sigma^2 \Delta t^{2\beta} + \sigma^2 \Delta t^{2\beta} + \cdots + \sigma^2 \Delta t^{2\beta-1}$

$n \sigma^2 \Delta t^{2\beta} = t \sigma^2 \Delta t^{2\beta-1}$

$\beta =$

$S(t)$

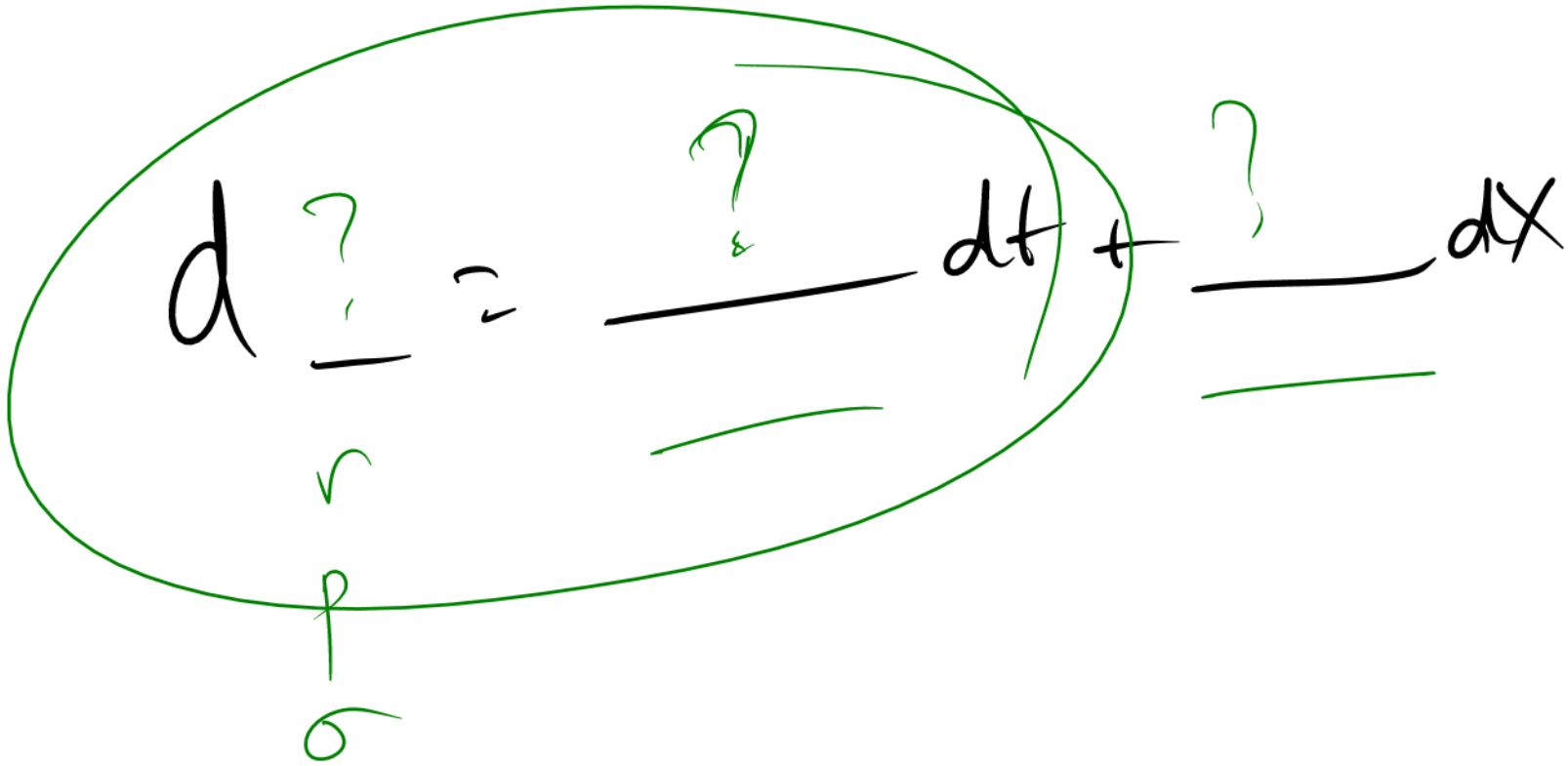
$$S_{i+1} - S_i = \mu S_i \Delta t + \sigma S_i \phi \Delta t^{1/2}$$

$$dS = \mu S\, dt + \sigma S\, dX$$

$$\frac{dS}{dt} = \mu S$$

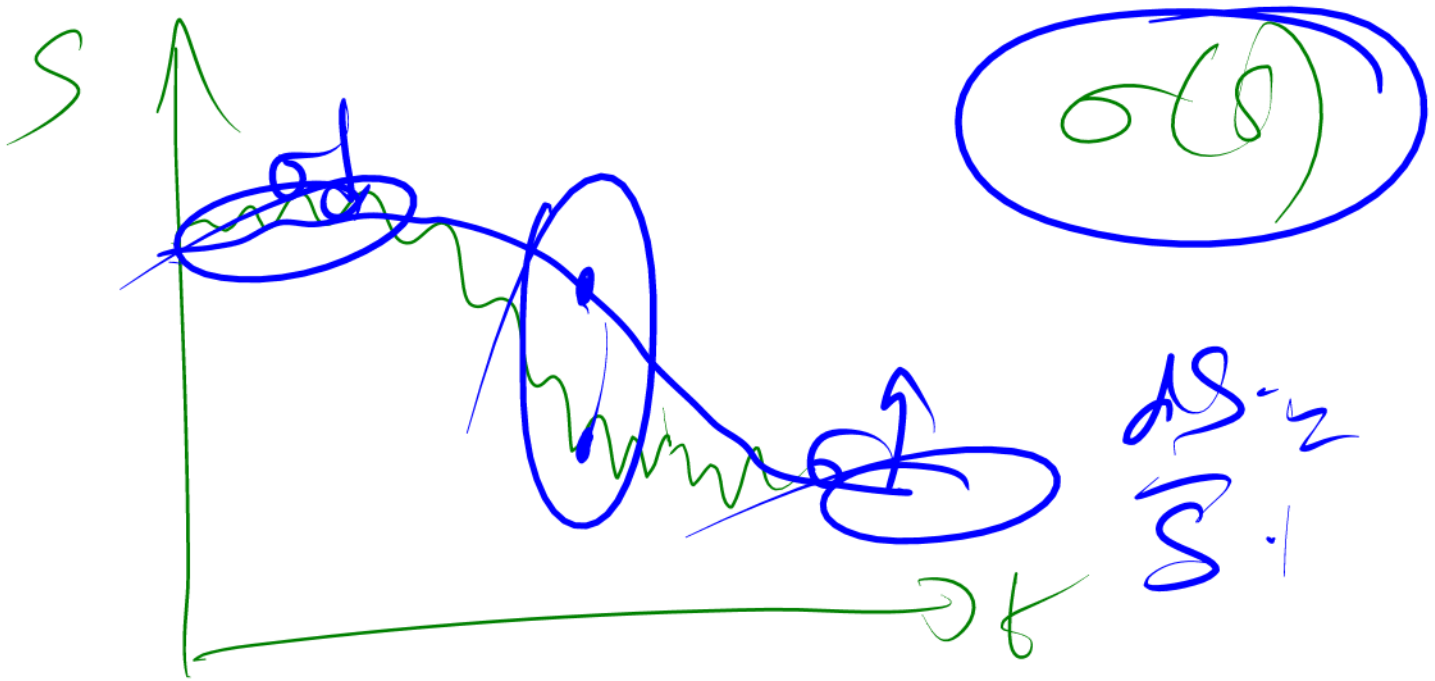
$$\frac{dS}{dt} = \mu S$$

$$S = S_0 e^{\mu t}$$



$$dS = \mu S\,dt + \sigma S\,dX$$

$$dr = ?\,dt + ?\,dX$$


S
t

"Mathematical Biology"

Jim Murray