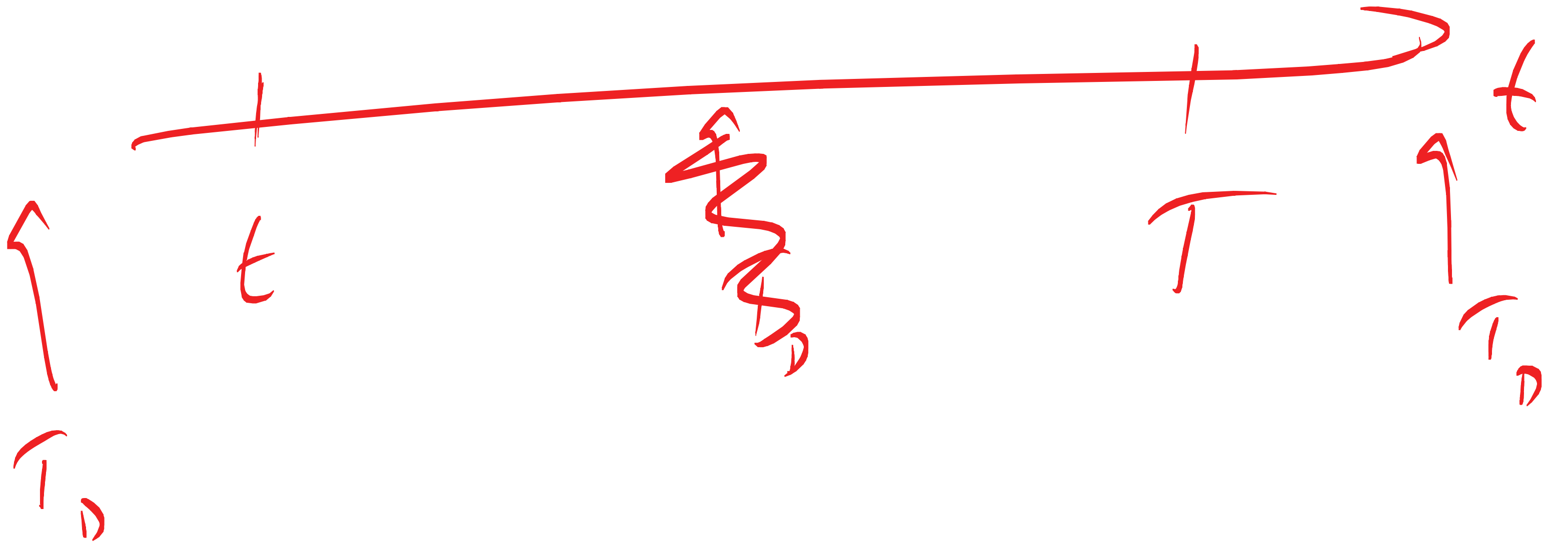
→ 1. Model — assumption

→ 2. Eqn ⟵

→ 3. Formulae ←


t
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$$a_1 W_1 + a_2 W_2 + a_3 W_3$$

$$\sum_{i=1}^{\infty} a_i W_i(x, \tau)$$

$$\int_{-\infty}^{\infty} a(x') \, W(x, \tau, x') \, dx'$$

$$\frac{\partial W}{\partial \tau} = \frac{1}{2}\sigma^2 \frac{\partial^2 W}{\partial x^2}$$

$\tau = T - t$

$x = \ln \xi + (r - \frac{1}{2}\sigma^2)(T-t)$

$$W(x, \tau, x')$$

$$\int_{-\infty}^{\infty} a(x') \, W(x, \tau, x') \, dx'$$

$$W_p = \int_{-\infty}^{\infty} a(x')\, W(x,\tau,x')\, dx'$$

$$\frac{\partial W_p}{\partial \tau} = \frac{1}{2}\sigma^2 \frac{\partial^2 W_p}{\partial x^2}$$

$$\underline{\underline{\frac{\partial W_p}{\partial \tau}}} = \frac{\partial}{\partial \tau}\int_{-\infty}^{\infty} \underline{a(x')\, W(x,\tau,x')\, dx'}$$

$$= \int_{-\infty}^{\infty} a(x')\, \frac{\partial W}{\partial \tau}(x,\tau,x')\, dx' \leftarrow$$

$$\frac{\partial^2 W_p}{\partial x^2} = \int_{-\infty}^{\infty} a(x')\, \frac{\partial^2 W}{\partial x^2}(\quad)\, dx'$$

$$\frac{\partial w_p}{\partial \tau} = \frac{1}{2}\sigma^2 \frac{\partial^2 w_p}{\partial x^2}$$

$$= \int_{-\infty}^{\infty} a(x') \frac{\partial w}{\partial \tau}(x,\tau,x')\,dx' - \int_{-\infty}^{\infty} \frac{1}{2}\sigma^2 a(x') \frac{\partial^2 w}{\partial x^2}(x,\tau,x')\,dx'$$

$$= \int_{-\infty}^{\infty} a(x') \underbrace{\left[\frac{\partial w}{\partial \tau}(x,\tau,x') - \frac{1}{2}\sigma^2 \frac{\partial^2 w}{\partial x^2}(x,\tau,x') \right]}_{=0} dx'$$

$$= 0$$

$$\int_{-\infty}^{\infty} a(x') \frac{e^{-\frac{(x-x')^2}{2\sigma^2\tau}}}{\sqrt{2\pi\tau}\,\sigma}\, dx'$$

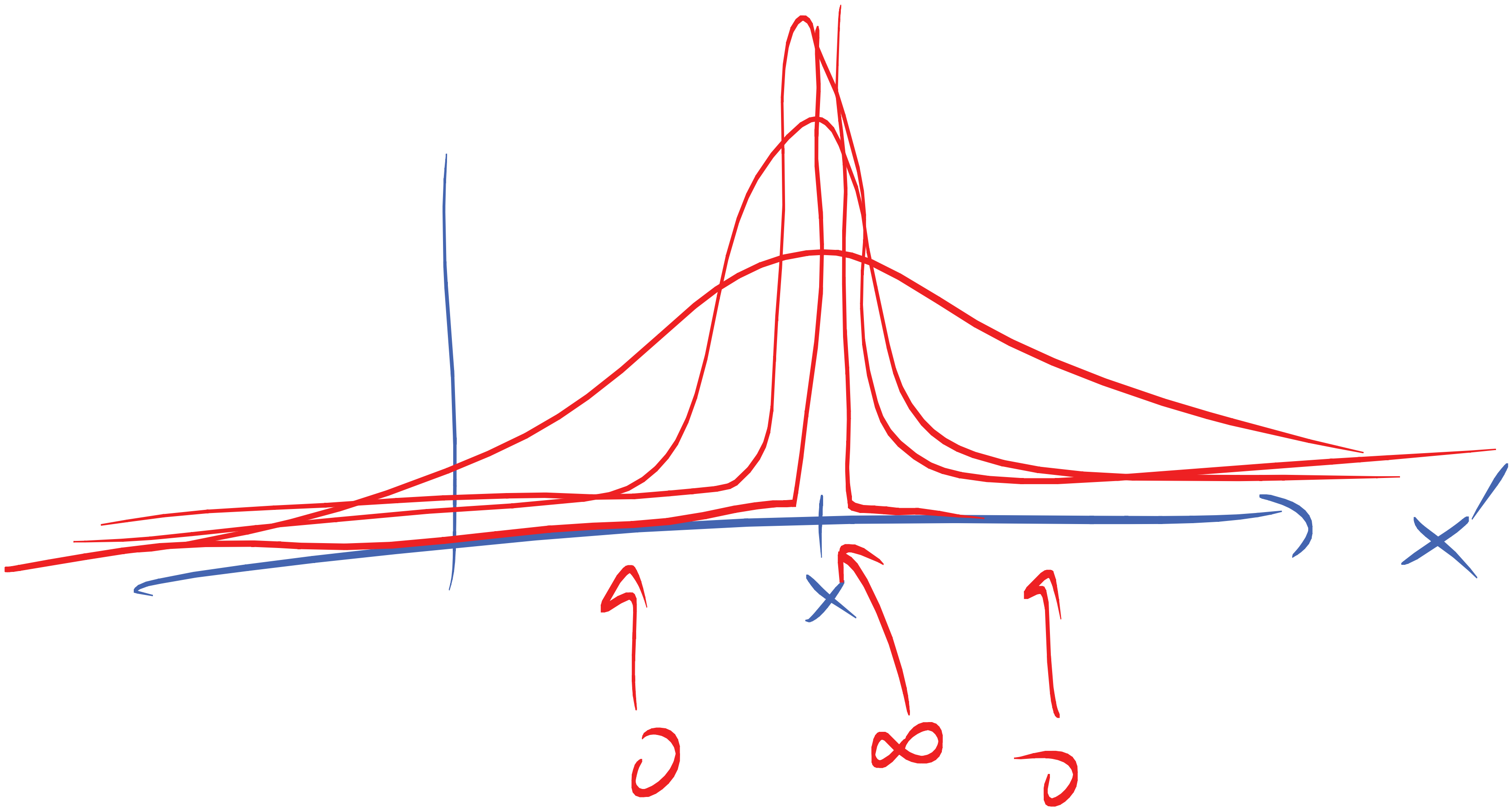
? $\tau \to 0$

Green's

$$\frac{e^{-\frac{\cdot}{\tau}}}{\sqrt{\tau}} \to 0$$

$x' = x$

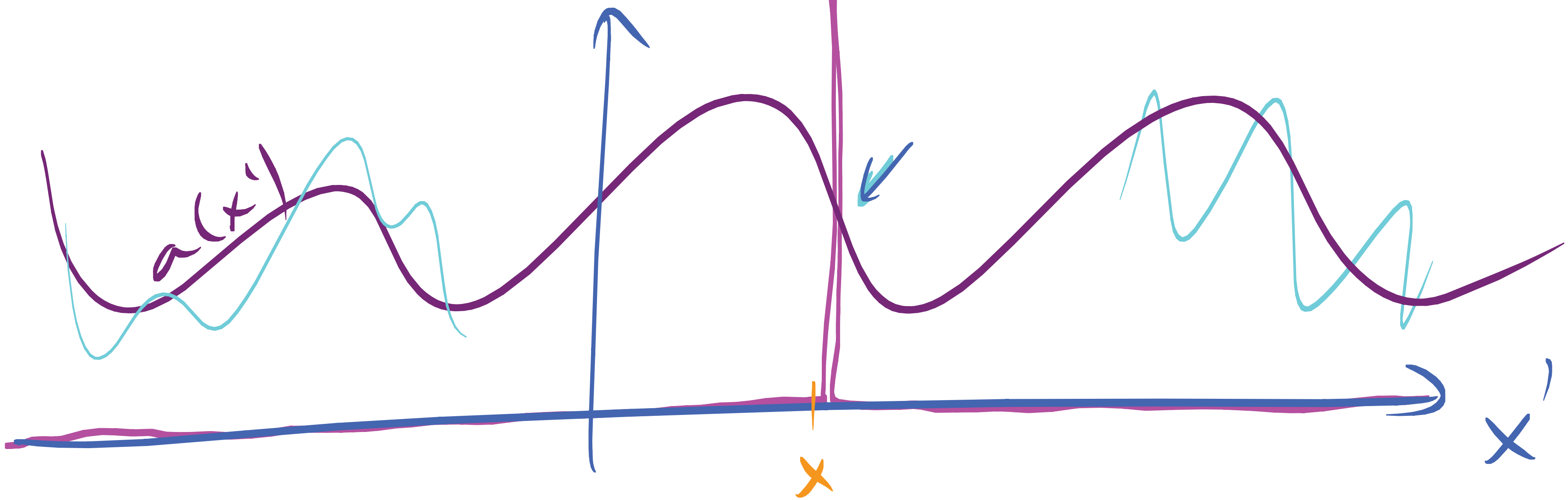
$$\frac{1}{\sqrt{\tau}} \to \infty$$



Dirac

Delta Function

$$\lim_{\tau \to 0} \int_{-\infty}^{\infty} a(x') \;\text{- - -}\; dx' = a(x)$$



$$\lim_{\tau \to 0} \int_{-\infty}^{\infty} a(\underline{x}') \, u_f(x, \tau, x') \, dx'$$

$$= \underline{a(x) = \text{Payoff}}$$

$$= a(\xi) = a(\ln S) = \underline{\max(S - E, 0)} = \text{PayOff}(S)$$

$$a(\underline{x}) = \max(e^x - E, 0)$$

$\ln S + (r - \tfrac{1}{2}\sigma^2)(T-t)$

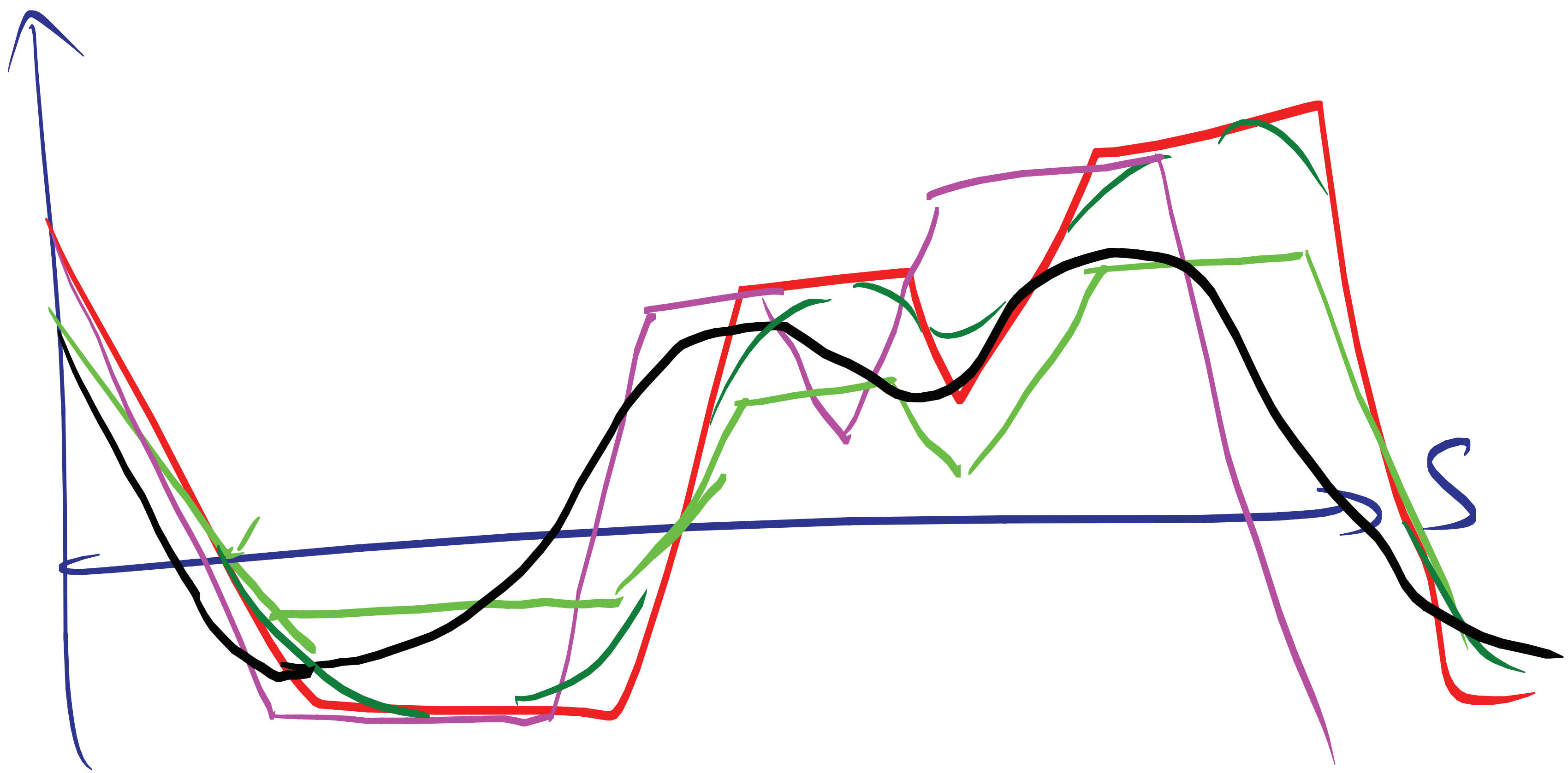
$$V = e^{-r(T-t)} \int_{-\infty}^{\infty} \max(e^{x'} - E, 0)\, \frac{e^{-\frac{(x-x')^2}{2\sigma^2(T-t)}}}{\sqrt{2\pi(T-t)}\,\sigma}\, dx'$$

$$x' = \ln S' + \left(r - \frac{1}{2}\sigma^2\right)(T-t)$$

$$\int_{-\infty}^{\infty} \qquad dx' = \int_0^{\infty} \qquad \frac{dS'}{S'}$$

$$\frac{dx'}{dS'} = \frac{1}{S'}$$

$$\frac{\partial V}{\partial t} + \frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2} + rS\frac{\partial V}{\partial S} - rV = 0$$

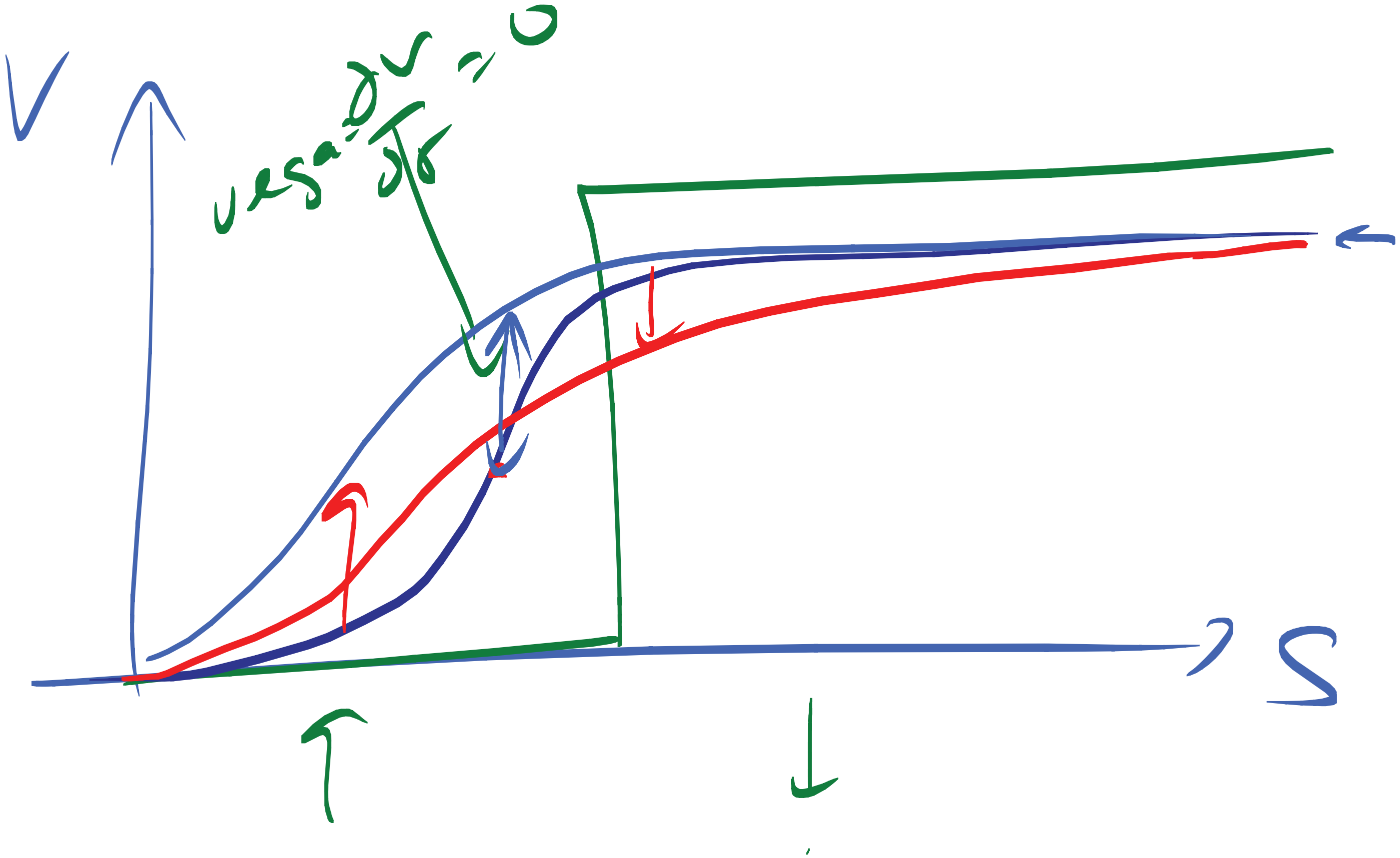


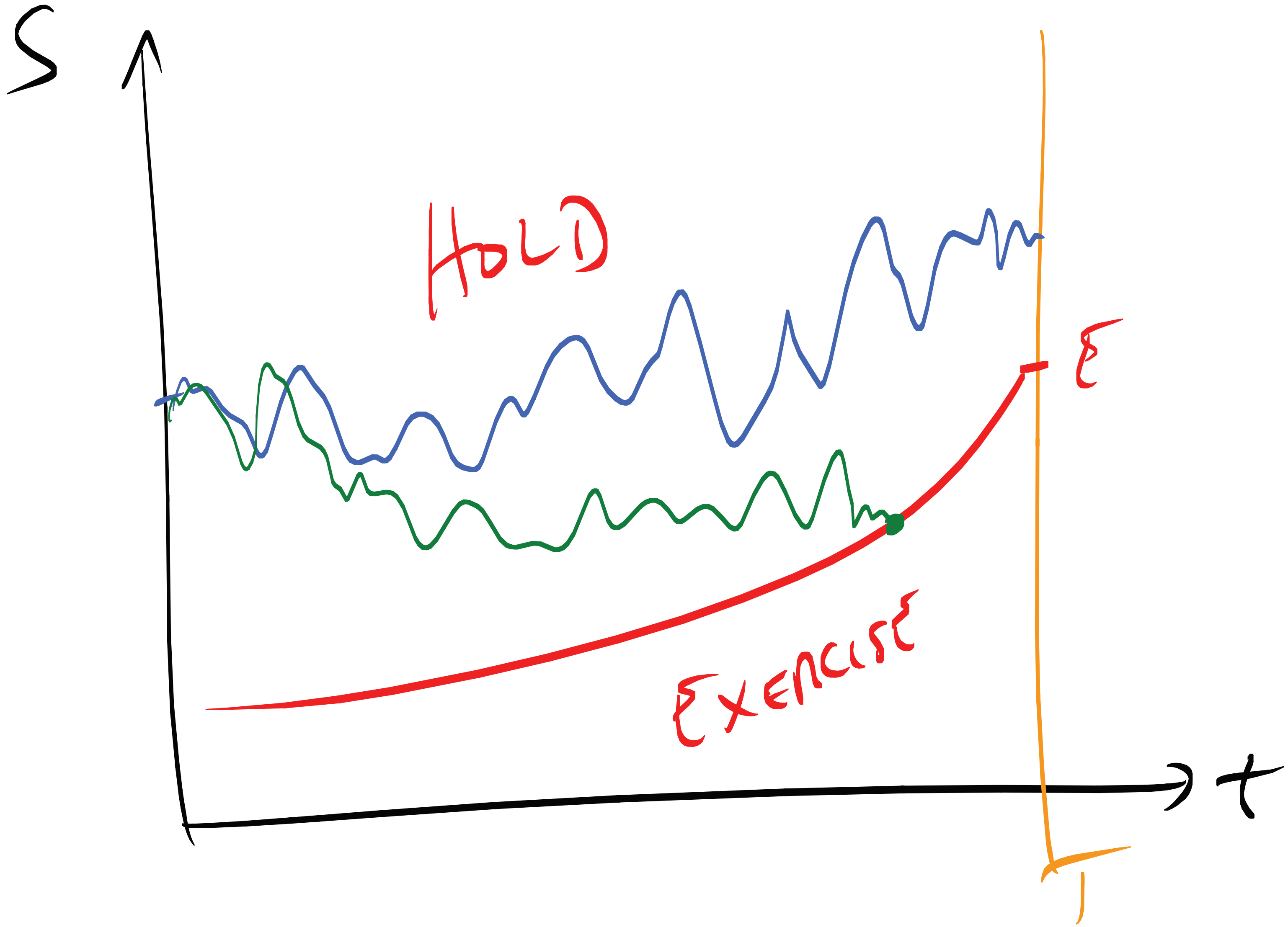
$$\Delta = N(d_1), \quad d_1 = \frac{\ln(S/K) + (r + \frac{1}{2}\sigma^2)(T-t)}{\sigma\sqrt{T-t}}$$

$$\text{Prob} = N(d_2'), \quad d_2' = \frac{\ln(S/K) + (\mu - \frac{1}{2}\sigma^2)(\ )}{\sigma\sqrt{T-t}}$$

'an' option

$$\frac{1}{2}\sigma^2 S^2 \frac{\partial^2 V}{\partial S^2}$$

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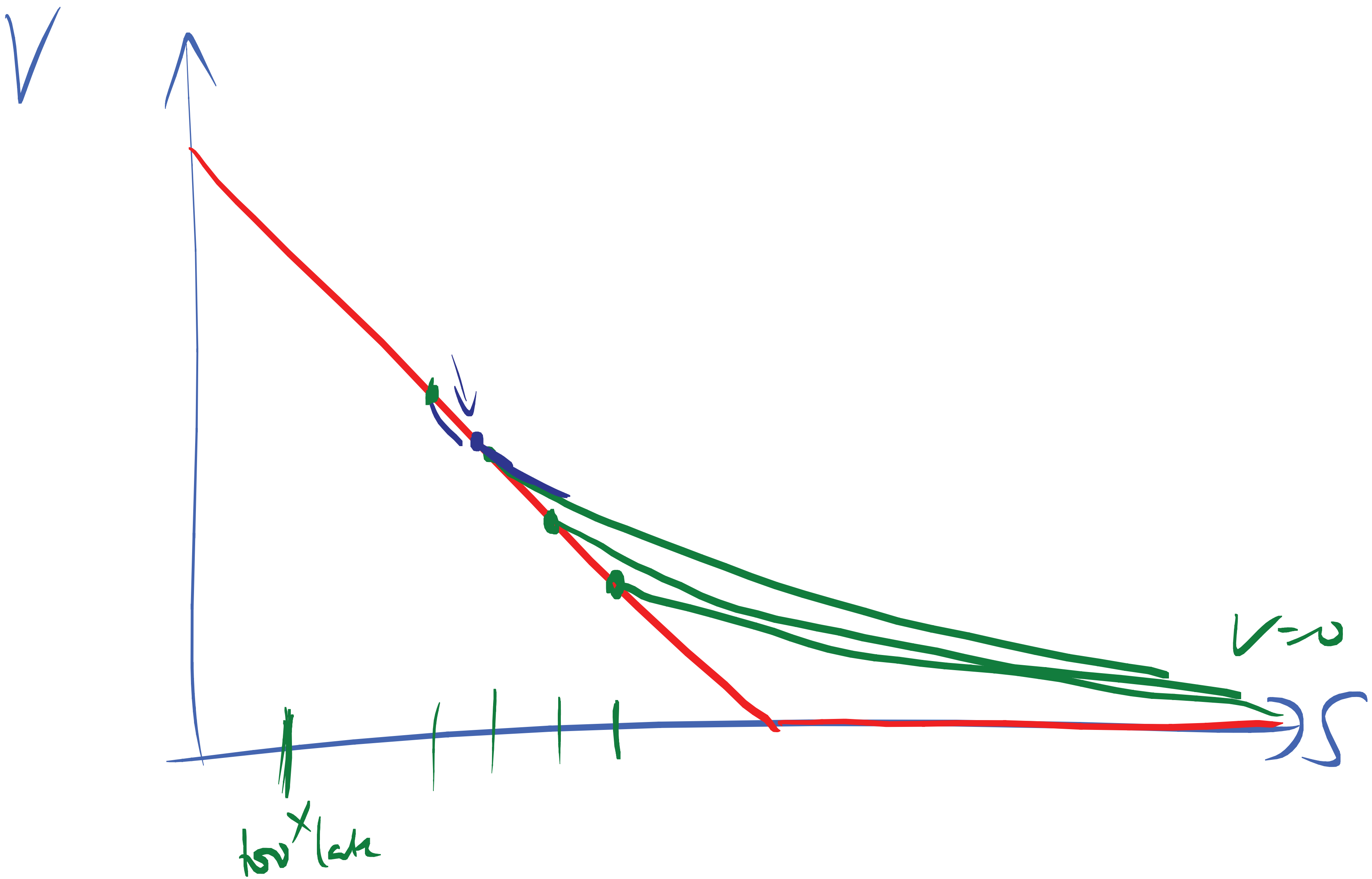
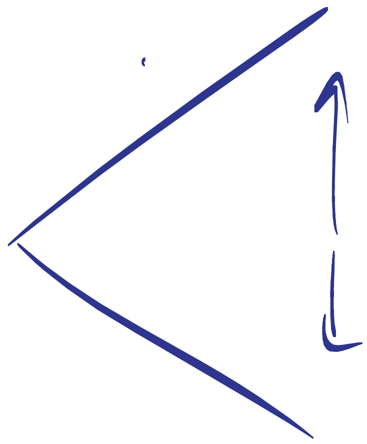

V
V=0
S
tov* late



$$\frac{\partial p}{\partial t} + c^2 \frac{\partial^2 p}{\partial y^2} = 0$$

$$\frac{\partial p}{\partial y}$$