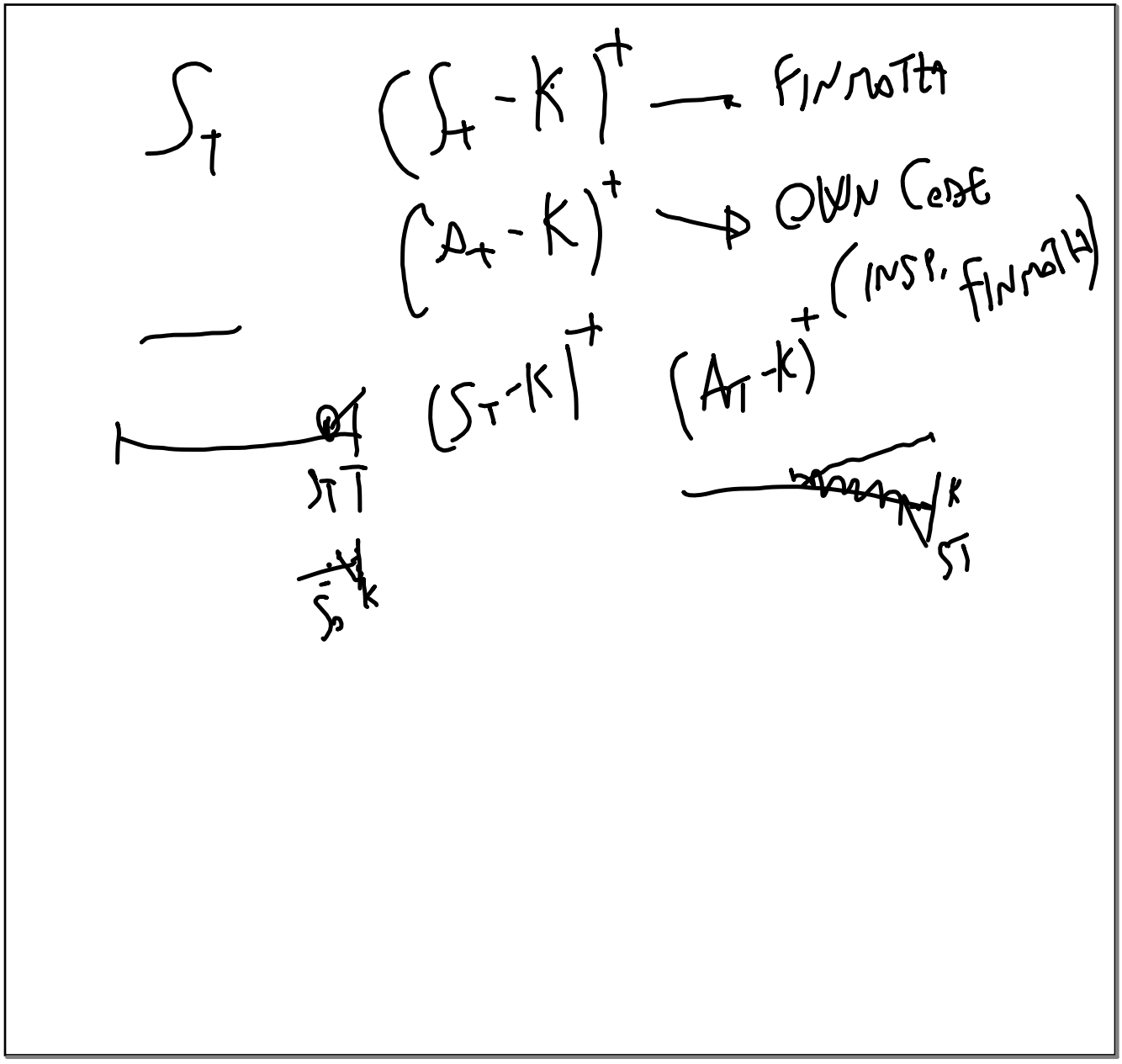

S_t
$(S_t - K)^+$ — FINMATH
$(A_t - K)^+$ → OWN Cost
(INSP. FINMATH)
$(S_T - K)^+$
$(A_T - K)^+$
S_0
K
S_T

$$dX_t = \mu(t, X_t)\,dt + \sigma(t, X_t)\,dW_t$$

$\exists! X_t$ $\quad \mu, \sigma : \mathbb{R} \to \mathbb{R}$ suffic. $\quad (\mathcal{F}_t, S)$

$\exists C$

① $|\mu(t,x) - \mu(t,y)| + |\sigma(t,x) - \sigma(t,y)| \le C|x-y|$

② $|\mu(t,x)| + |\sigma(t,x)| \le C(1+|x|)$

$\forall x, y, t \in \mathbb{R}^+$

$\forall x \in \mathbb{R}$, t

suff $\exists!$

$dX_t = (a - bX_t) + X_t^{\alpha}\, dW_t$ Lipt slow growth

✓ ✓ $\mu = a - bx$

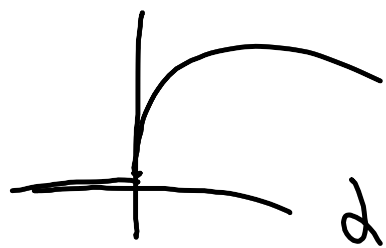
$\sigma = x^{\alpha}$

$\alpha = 0$

x^{α} $\quad x$ (1) (2) $\quad \mathbb{R}$

$\alpha < 1$

$0 < \alpha < 1$



$d\, x^{\alpha - 1} = +\infty$

$|f(x) - f(y)| \le \sup_{\mathbb{R}} f'(\cdot)\, |x - y|$

$0 < \alpha < 1$ not Lip on $\mathbb{R}$

$\alpha = 1/2$ Heston Model

$\boxed{\alpha = 1}$ $\vee$ $\boxed{\alpha = 0}$ $\boxed{\alpha = 1}$

X

$\alpha > 1$

Lip

$X < 1 + |X|$

$\exists = \{0, 1\}$ $0 < \alpha < 1$

$\exists !$ sol

but not thm ass

June 17, 2016