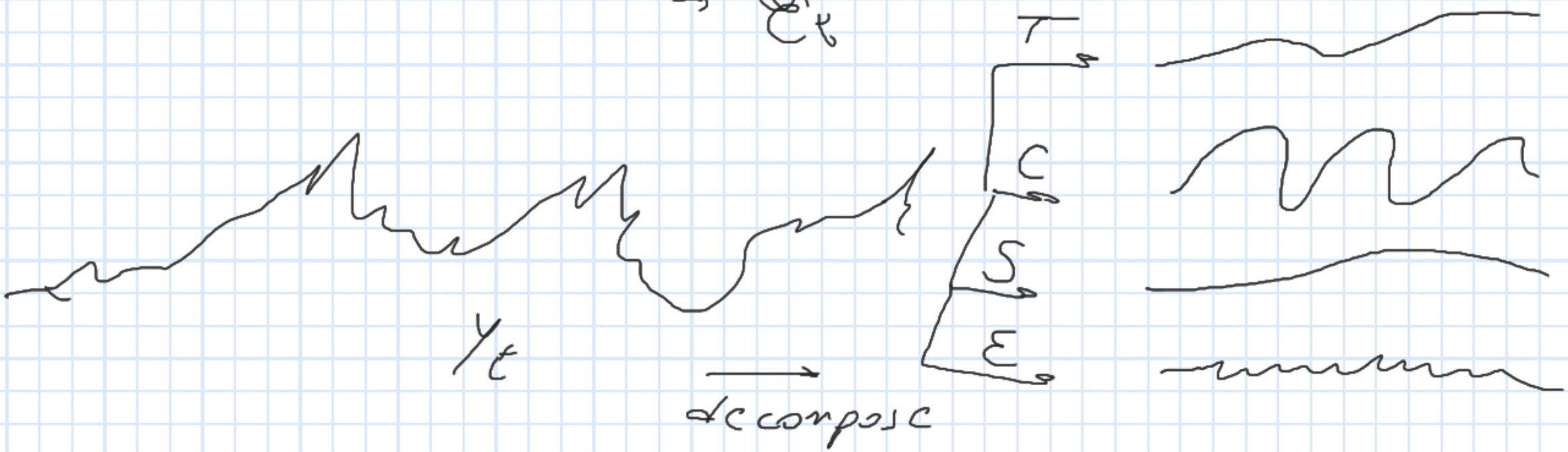
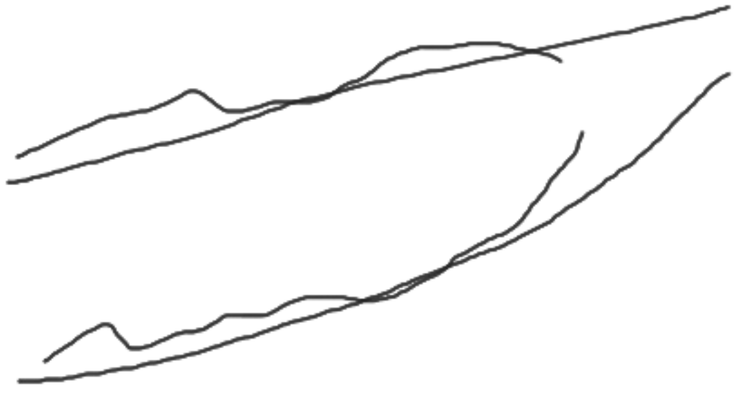
$\{y_t\}$ → SARIMA → Residuos → GARCH → $\hat{\varepsilon}_t$

$\hat{y}_t = \hat{x}_t + \hat{\varepsilon}_t$

$\hat{x}_t$

$\hat{\varepsilon}_t$





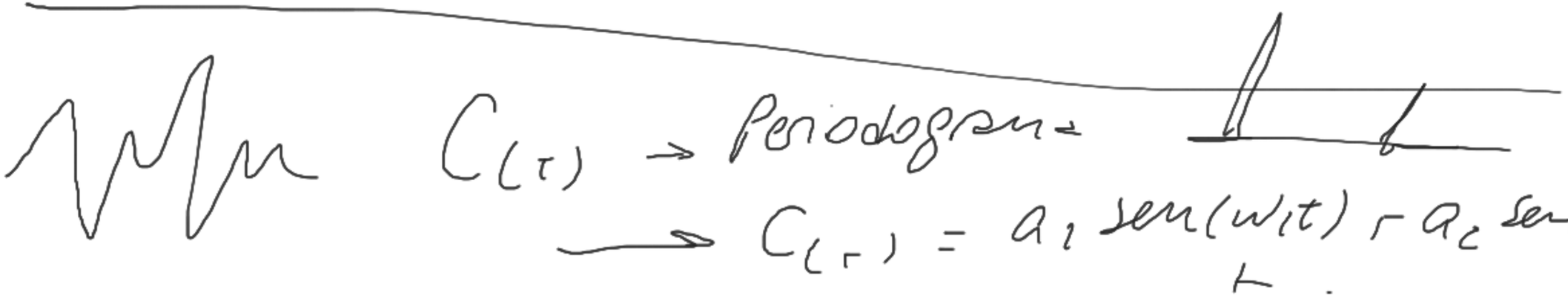
$\longrightarrow T(t)$ cuadrados mínimos

$\rightarrow \beta_0, \beta_1$

$\rightarrow \beta_0, \beta_1, \beta_2$

$T(t) = \beta_0 + \beta_1 t$ Lineal

$\hookrightarrow \quad \hookrightarrow \quad \ldots$



$C(\tau) \rightarrow$ Periodograma

$\longrightarrow C(\tau) = a_1 \operatorname{sen}(w_1 t) + a_2 \operatorname{sen}(w_2 t) + \ldots$

$\epsilon(t)$

— AR(p)
MA(q)
ARMA(1,p,q)

↳ ARMA(2,3)

a

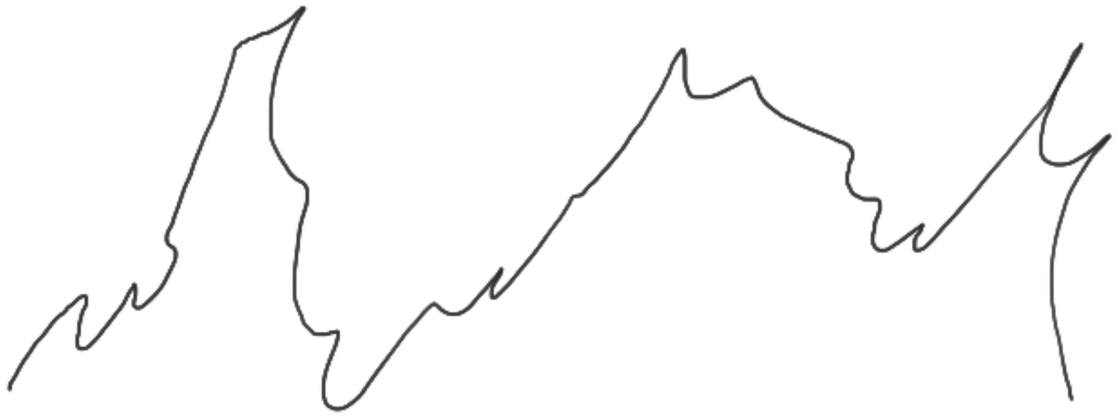
$\epsilon(t) \sim$ ~~N~~(

$a_1 \epsilon_{t-1} + a_2 \epsilon_{t-2} + b_1 \epsilon_{t-1} + b_2 \epsilon_{t-2} + b_3 \epsilon_{t-3} + \epsilon_t$

ARMA(2,3)

↳

$a_1 =$
$a_2 =$
$b_1 =$
b_2
b_3



→ Predicción
ARIMA(p, d, q)

$y_t = X_t + \mu$

→ Predicción
LSTM

$y_t = y$

$$Y_t = Y_{t-S}$$

SARIMA $(p, d, q)(P, D, Q)_S$

12 → meses

$$\nabla Y_t = Y_t - Y_{t-1}$$

$$\nabla_S^S Y_t = Y_t - Y_{t-S}$$