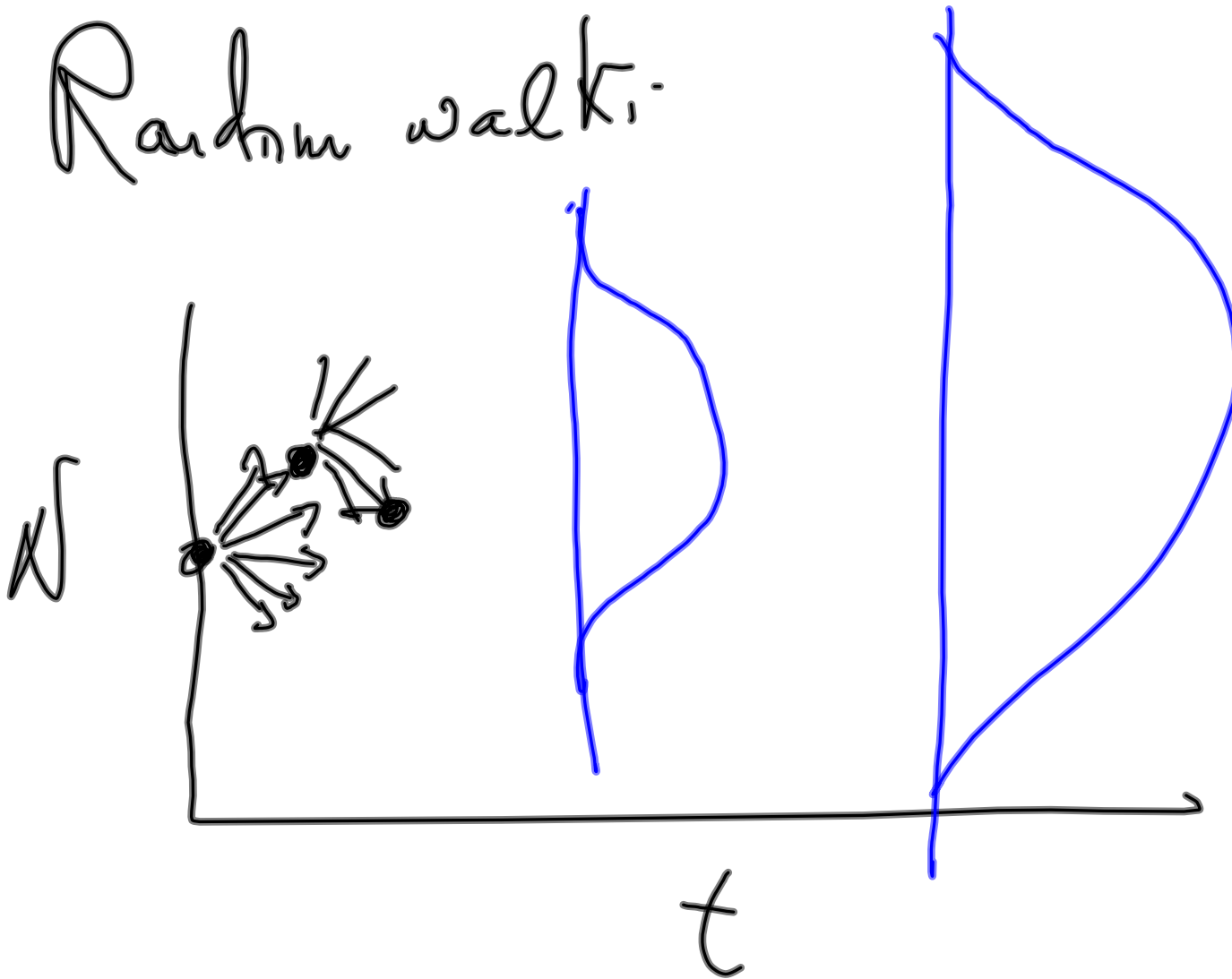
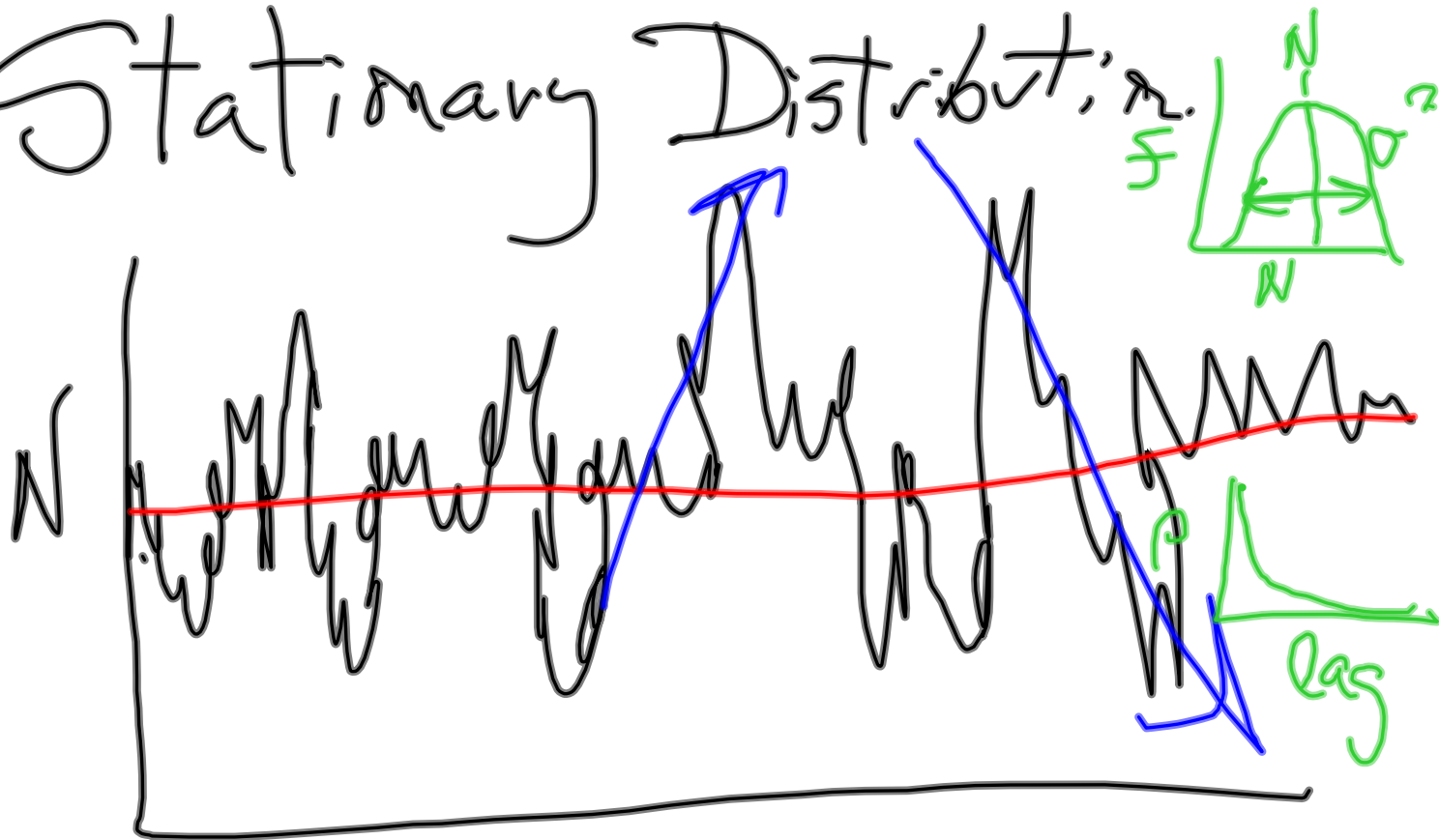


Random walk:



Stationary Distribution



Definition $E(N)$ does not change w/ time
 $\text{Var}(N)$ does not change w/ time

$$(N_{t+1} - \bar{N}) = (N_t - \bar{N})\alpha + \varepsilon_t$$

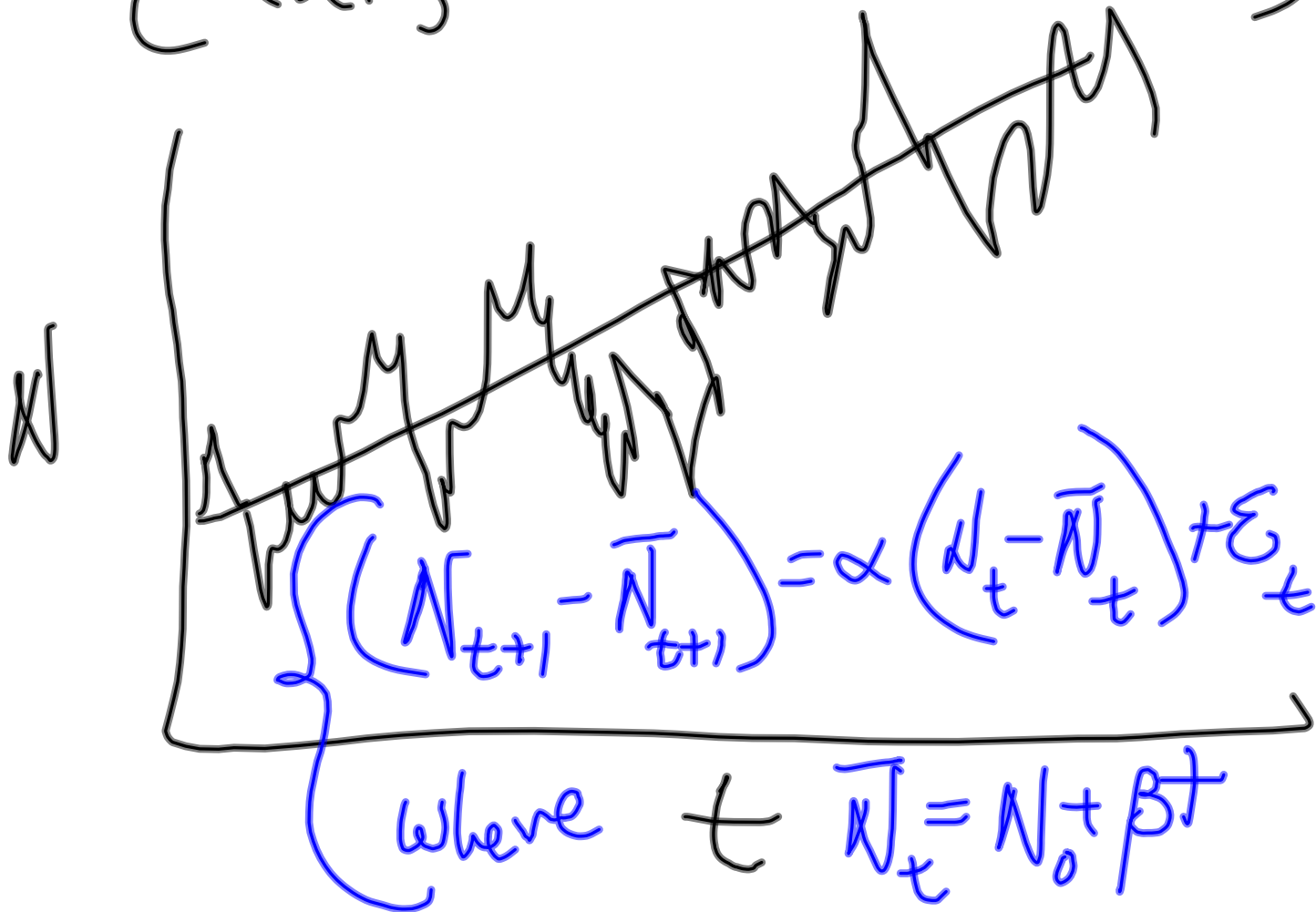
ε is iid

$$\bar{\varepsilon} = 0$$
$$\sigma_{\varepsilon}^2$$

1st order autoregressive (AR1)

$$N_{t+1}^{\text{pred}} = (N_t - \bar{N})\alpha + \bar{N} + \varepsilon$$

Linear trend with AR(1) residual
(real, not observation error)



Special Case
 $\alpha = 1$

$$N_{t+1} = N_t + \Sigma$$

