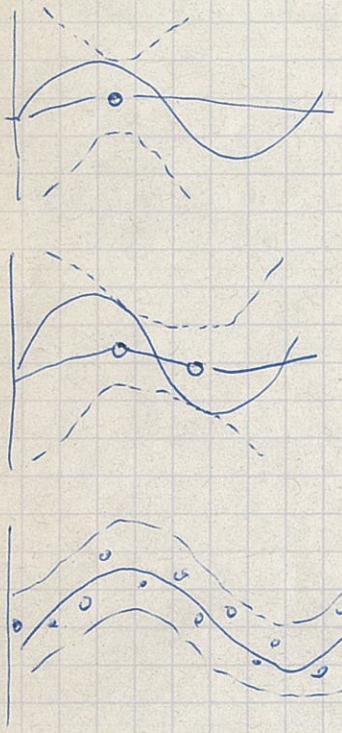
$$p(t|\underline{x}, \underline{t}, \alpha, \beta) = N(t|\ \underline{m}_N^T \underline{\phi}(\underline{x}),\ \sigma_N^2(\underline{x}))$$

- $\underline{m}_N^T \underline{\phi}(\underline{x})$: MODEL AT NEW $\underline{x}$
- $\sigma_N^2(\underline{x}) = \frac{1}{\beta} + \underline{\phi}^T \underline{\Sigma}_N \underline{\phi}$
  - $\frac{1}{\beta}$: NOISE ON DATA
  - $\underline{\Sigma}_N$: UNCERTAINTY OF $\underline{w}$

(BISHOP, FIG. 3.8)



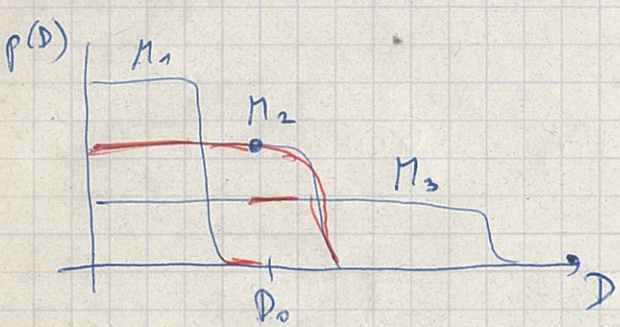
$$\sigma_{N+1}^2(\underline{x}) \leq \sigma_N^2(\underline{x})$$

$$N \to \infty \quad \sigma_N^2(\underline{x}) \to \frac{1}{\beta}$$

FROM DATA (INPUT, OUTPUT) TO NEW OUTPUTS FOR NEW INPUTS

BAYESIAN MODEL COMPARISON (BISHOP 3.4, FIG. 3.13)

$$p(M_i) \quad p(D|M_i) \to p(M_i|D) \propto p(M_i)\, p(D|M_i)$$



MIDDLE COMPLEXITY DATA → MID COMPLEXITY MODELS