

## 1 Marginal Log-Likelihood

Library:

$$\log p(X) = -\frac{1}{2}(f(X)-m)'(K(X, X)-I\sigma_n^2)^{-1}(f(X)-m) - \frac{1}{2}\log|K(X, X)-I\sigma_n^2| - \frac{1}{2}n\log(2\pi\sigma_n^2) \quad (1)$$

Book:

$$\log p(X) = -\frac{1}{2}(y-m)'*(K-I\sigma_n^2)^{-1}*(y-m) - \frac{1}{2}\log|K-I\sigma_n^2| - \frac{1}{2}n\log(2\pi) \quad (2)$$

## 2 Prediction

$$f(X*) = m(X*) + K(\theta, X^*, X)'(K(X, X) - I\sigma_n^2)^{-1}(f(X) - m(X)) \quad (3)$$

$$\sigma(X*) = K(\theta, X^*, X^*) - K(\theta, X^*, X)'(K(X, X) - I\sigma_n^2)^{-1}K(\theta, X^*, X) \quad (4)$$