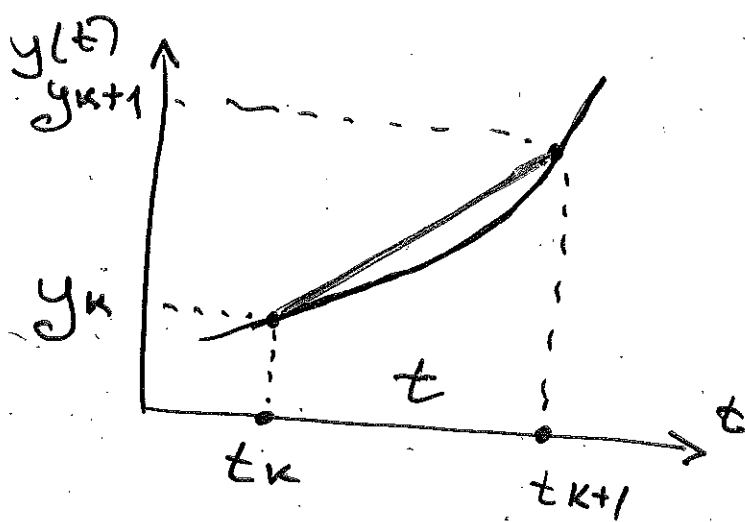


Interpolation



— exakt
- - linjär
interpolation

$$t_k < t < t_{k+1}$$

Linjär interpolation:

$$y \approx y_k + (t - t_k) \frac{y_{k+1} - y_k}{t_{k+1} - t_k}$$

Härledning:

$$y = at + b \quad (*)$$

$$y_k = y(t_k) = a \cdot t_k + b \quad (1)$$

$$y_{k+1} = y(t_{k+1}) = a \cdot t_{k+1} + b \quad (2)$$

$$(2) - (1): a(t_{k+1} - t_k) = y_{k+1} - y_k$$

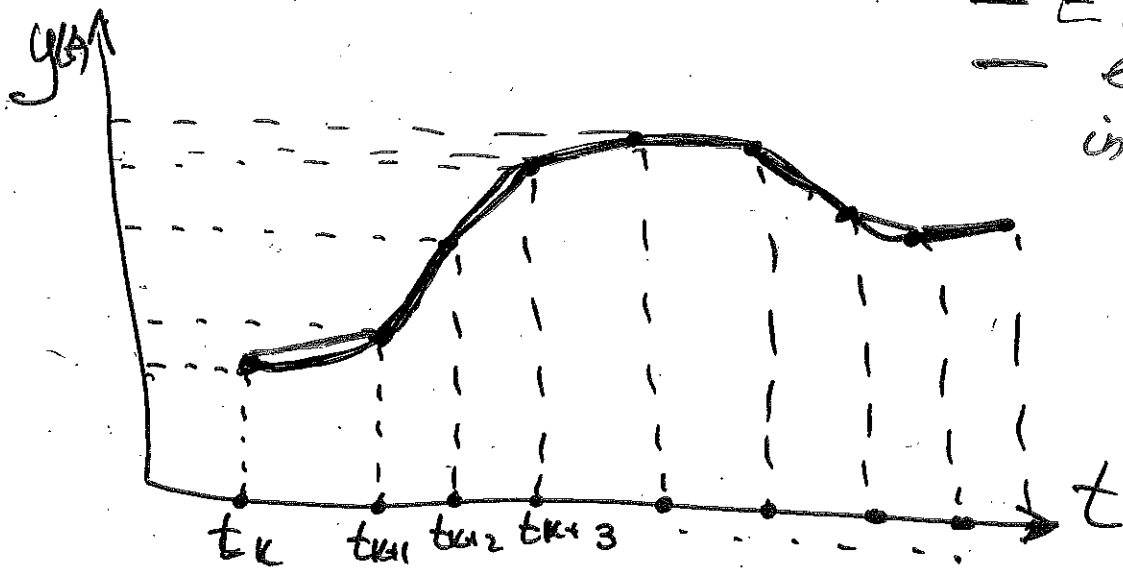
$$a = \frac{y_{k+1} - y_k}{t_{k+1} - t_k}$$

$$b = y_k - at_k = y_k - t_k \cdot \frac{y_{k+1} - y_k}{t_{k+1} - t_k}$$

Sätter in a och b i (*):

$$y \approx y_k + (t - t_k) \frac{y_{k+1} - y_k}{t_{k+1} - t_k}$$

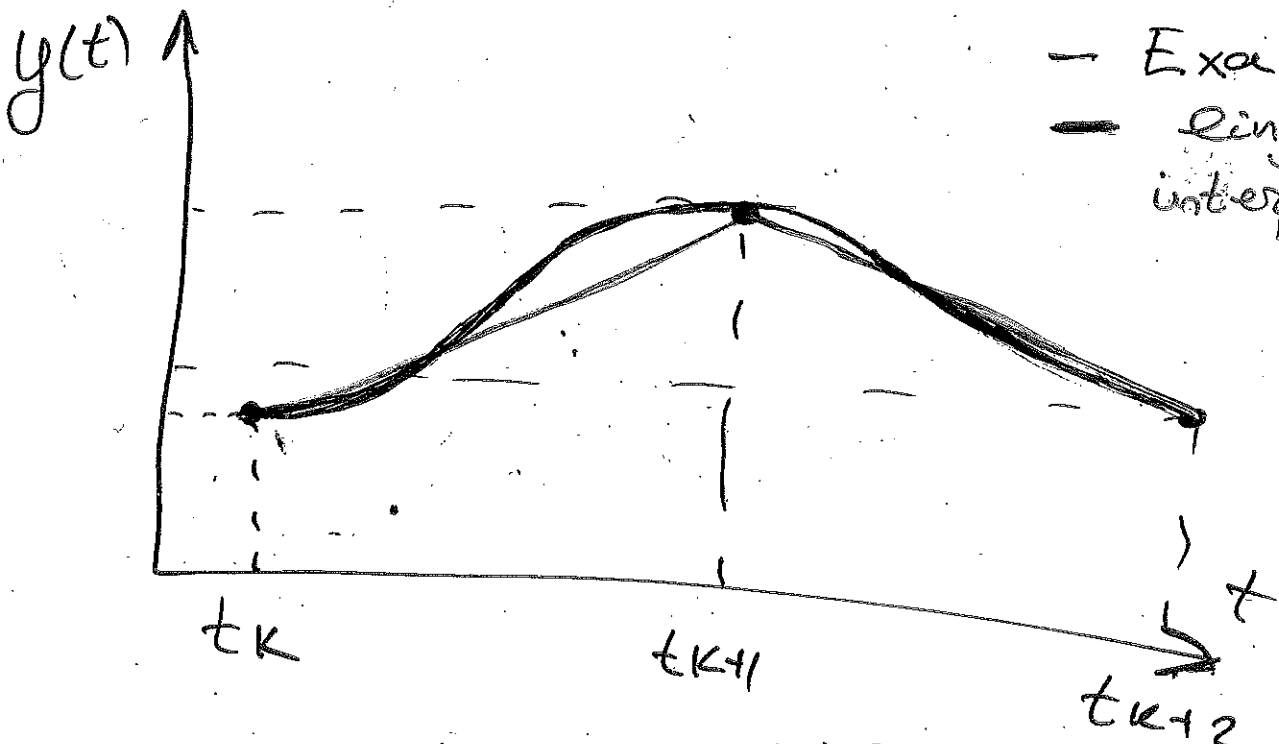
Interpolation



— Exakt
 - - - lineäre
 interpolation

$$t_k < t < t_{k+1}: y \approx y_k + (t - t_k) \frac{y_{k+1} - y_k}{t_{k+1} - t_k}$$

$$t_{k+1} < t < t_{k+2}: y \approx y_{k+1} + (t - t_{k+1}) \frac{y_{k+2} - y_{k+1}}{t_{k+2} - t_{k+1}}$$



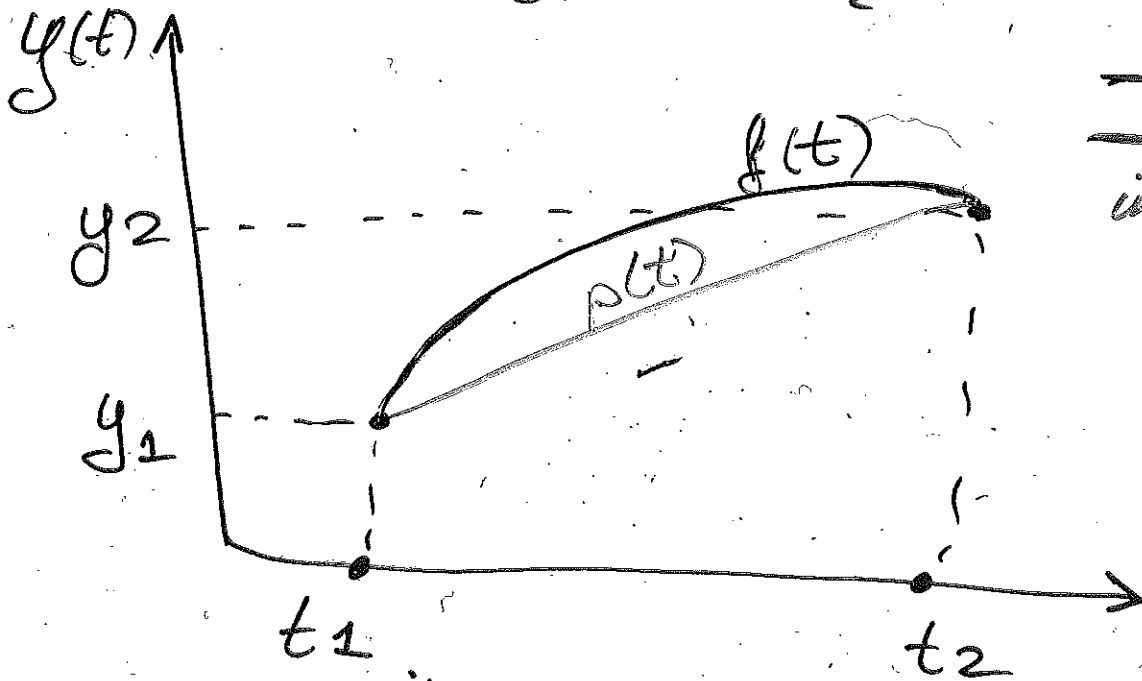
— Exakt
 - - - lineäre
 interpolation

Mehr punkter — bessere interpolation

Interpolation

Vivert: $y_1 = f(t_1) + \delta_1$
 $y_2 = f(t_2) + \delta_2$ \Rightarrow arroundning

$$t_1 < t < t_2$$



$f(t)$
 — exact
 — einjäre
 interpolat.
 $p(t)$

P — einjäre
 interpolationspolynom:

$$p(t_1) = y_1 : p(t) = y_1 + (t-t_1) \frac{y_2 - y_1}{t_2 - t_1}$$

beräkna

exakt

$$p(t_2) = y_2 : p(t) = f(t_1) + (t-t_1) \frac{f(t_2) - f(t_1)}{t_2 - t_1} - f(t)$$

felet

$$+ \delta_1 + (t-t_1) \frac{\delta_2 - \delta_1}{t_2 - t_1} = P_\delta(t)$$

$$= P_\delta(t)$$

Eller:

$$p(t) - f(t) = (P_f(t) + P_\delta(t)) - f(t) =$$

approxim
 felet

\Downarrow

$$p(t) = P_f(t) + P_\delta(t)$$

$$= P_f(t) - f(t) + P_\delta(t)$$

arroundningfelet