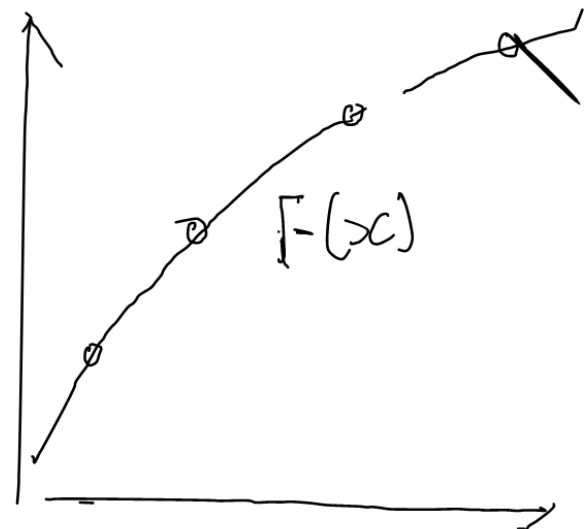


# ИНТЕРПОЛЯЦИЯ

$x$	$x_0$	$x_1$	$x_2$	$\dots$	$x_n$	$y$
$y$	$y_0$	$y_1$	$y_2$	$\dots$	$y_n$	



$$F(x) = a_0 + a_1x + a_2x^2 + \dots + a_nx^n$$

$$\begin{cases} F(x_0) = y_0 \\ F(x_1) = y_1 \\ F(x_2) = y_2 \\ \vdots \\ F(x_n) = y_n \end{cases} \begin{cases} a_0 + a_1x_0 + a_2x_0^2 + \dots + a_nx_0^n = y_0 \\ a_0 + a_1x_1 + a_2x_1^2 + \dots + a_nx_1^n = y_1 \\ a_0 + a_1x_2 + a_2x_2^2 + \dots + a_nx_2^n = y_2 \\ \vdots \\ a_0 + a_1x_n + a_2x_n^2 + \dots + a_nx_n^n = y_n \end{cases}$$

$$\begin{pmatrix} 1 & x_0 & x_0^2 & \dots & x_0^n \\ 1 & x_1 & x_1^2 & \dots & x_1^n \\ \vdots & \vdots & \vdots & \ddots & \vdots \\ 1 & x_n & x_n^2 & \dots & x_n^n \end{pmatrix} \begin{pmatrix} a_0 \\ a_1 \\ \vdots \\ a_n \end{pmatrix} = \begin{pmatrix} y_0 \\ y_1 \\ \vdots \\ y_n \end{pmatrix}$$

Интерпол. Лагранж.

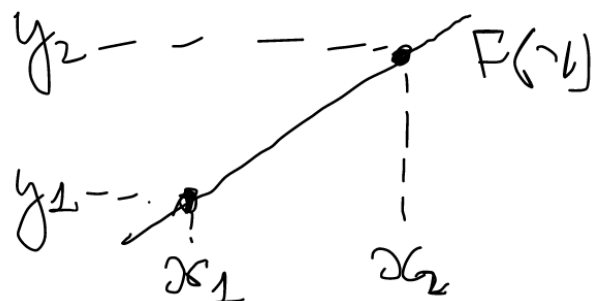
$$F(x) = y_0 l_0(x) + y_1 l_1(x) + \dots + y_n l_n(x)$$

$$l_i(x_i) = 1$$

$$l_i(x_j) = 0 \quad i \neq j$$

$$l_i(x) = \frac{(x_0 - x)(x_1 - x) \dots (x_{i-1} - x)(x_{i+1} - x) \dots (x_n - x)}{(x_0 - x_i)(x_1 - x_i) \dots (x_{i-1} - x_i)(x_{i+1} - x_i) \dots (x_n - x_i)}$$

$$F(x) = y_1 \frac{x_2 - x}{x_2 - x_1} + y_2 \frac{x_1 - x}{x_1 - x_2}$$



$$a_0 + a_1 x$$

$$\frac{y_2 - y_1}{x_2 - x_1} x$$

