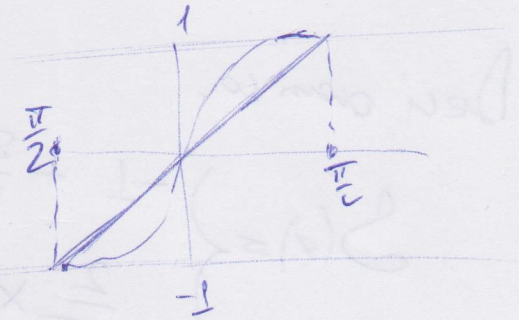
LUPASCU
MARIAN
331

TEMA #9
-CN-

3) $f(x) = \min(x)$
$\Delta = \left(-\frac{\pi}{2}, 0, \frac{\pi}{2}\right)$



$$S(x) = \begin{cases} S_1(x), & x \in \left[-\frac{\pi}{2}, 0\right) \\ S_2(x), & x \in \left[0, \frac{\pi}{2}\right] \end{cases} \text{ unde.}$$

$S_i(x) = a_i + b_i(x - x_i^0) \Rightarrow$

$$S(x) = \begin{cases} a_1 + b_1\left(x + \frac{\pi}{2}\right) & x \in \left[-\frac{\pi}{2}, 0\right) \\ a_2 + b_2 x & x \in \left[0, \frac{\pi}{2}\right] \end{cases}$$

Deci. S interpolează f în cele 3 noduri $\Rightarrow$

$$\begin{cases} S_1(x_1) = f(x_1) = -1 \\ S(x_2) = f(x_2) = 0 \\ S(x_3) = f(x_3) = 1 \end{cases} \Leftrightarrow \begin{cases} S_1\left(-\frac{\pi}{2}\right) = -1 \\ S_2(0) = 0 \\ S_2\left(\frac{\pi}{2}\right) = 1 \end{cases} \Leftrightarrow$$

$$\begin{cases} a_1 + b_1\left(-\frac{\pi}{2} + \frac{\pi}{2}\right) = -1 \\ a_2 + b_2(0 - 0) = 0 \\ a_2 + b_2\left(\frac{\pi}{2} - 0\right) = 1 \end{cases} \Leftrightarrow \begin{cases} a_1 = -1 \\ a_2 = 0 \\ a_2 + \frac{\pi}{2} b_2 = 1 \end{cases} \Rightarrow b_2 = \frac{1}{\frac{\pi}{2}} = \frac{2}{\pi}$$

Pe de alte parte S continua în $x_2 = 0 \Rightarrow$

$S_1(0) = S_2(0)$.

$a_1 + b_1 \frac{\pi}{2} = a_2 \Rightarrow b_1 = \frac{a_2 - a_1}{\frac{\pi}{2}} = \frac{1}{\frac{\pi}{2}} = \frac{2}{\pi}$

Deci avem ca

$$S(x) = \begin{cases} -1 + \frac{2}{\pi}\left(x + \frac{\pi}{2}\right), & x \in \left[-\frac{\pi}{2}, 0\right) \\ \frac{2}{\pi} x, & x \in \left[0, \frac{\pi}{2}\right] \end{cases} \Leftrightarrow$$

$$S(x) = \begin{cases} \frac{2}{\pi} x, & x \in \left[-\frac{\pi}{2}, 0\right) \\ \frac{2}{\pi} x, & x \in \left[0, \frac{\pi}{2}\right] \end{cases} = \boxed{\frac{2}{\pi} x} \quad (\forall) x \in \left[-\frac{\pi}{2}, \frac{\pi}{2}\right]$$