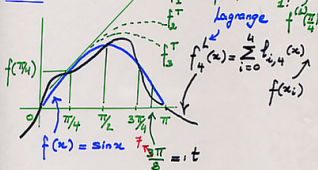


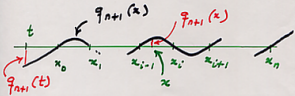
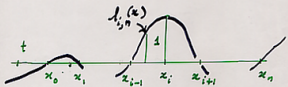
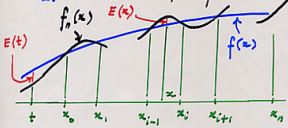
Mtg 11: Thu, 21 Jan 10 Taylor 11-1
 HN: $f_1^T(x) = f(\frac{\pi}{4}) + \frac{(x-\frac{\pi}{4})^1}{1!} f'(\frac{\pi}{4})$



Find n at $|f_n^T(\frac{7\pi}{8}) - f(\frac{7\pi}{8})|$
 $\leq |f_4^L(\frac{7\pi}{8}) - f(\frac{7\pi}{8})| \leq \frac{|f_5(t)|}{5!}$
 $|E_4^L(\frac{7\pi}{8})|$

Thm: $E_4^L(t) = \frac{f_{4+1}(t)}{(4+1)!} f^{(4+1)}(s)$
 $|E_4^L(t)| \leq \frac{|f_{4+1}(t)|}{(4+1)!}$

Lagrange interp. error cont'd p.10-3 (11-2)
 L. Geom. interpr. of $E(x)$.



$$\left. \begin{array}{l} \text{Scale } \frac{E(x)}{\varphi_{n+1}(x)} \\ \text{Scale } \frac{E(t)}{\varphi_{n+1}(t)} \end{array} \right\} \begin{array}{l} \text{Diff of scaled } \ll -3 \\ \text{errors:} \\ d(x) := \frac{E(x)}{\varphi_{n+1}(x)} - \frac{E(t)}{\varphi_{n+1}(t)} \end{array}$$

$$\Rightarrow \underbrace{d(x) \cdot \varphi_{n+1}(x)}_{G(x)} = E(x) - \frac{\varphi_{n+1}(x)}{\varphi_{n+1}(t)} E(t)$$

$(n+1)$ deriv. of $E(\cdot)$, $\varphi_{n+1}(\cdot)$ cont.

$\Rightarrow G^{(n+1)}(\cdot)$ cont.

$$\text{Note: } G(x_i) = \underbrace{E(x_i)}_{=0} - \frac{\overbrace{\varphi_{n+1}(x_i)}^0}{\varphi_{n+1}(t)} E(t)$$

$i = 0, 1, \dots, n$

