APROXIMAR

$$\sqrt{99}$$

$f(x) = \sqrt{x}$ $\quad a = 100$ $\quad f(a) = 10$

$f'(x) = \frac{1}{2\sqrt{x}}$ $\quad f'(a) = \frac{1}{2\sqrt{100}} = \frac{1}{20}$

$f''(x) = \left(\frac{1}{2} x^{-1/2}\right)' = -\frac{1}{4} x^{-3/2} = -\frac{1}{4x\sqrt{x}}$

$T_1(x) = f(a) + f'(a)(x-a)$

$= 10 + \frac{1}{20}(x-100)$

$f(x) = T_1(x) + \frac{f''(c)}{2}(x-a)^2$

$\sqrt{x} = 10 + \frac{1}{20}(x-100) - \frac{1}{4c\sqrt{c}} \frac{(x-100)^2}{2}$

$\sqrt{99} = 10 + \frac{1}{20}(99-100) - \frac{1}{\quad}(99-100)^2$

20 $\qquad\qquad 4c\sqrt{c} \qquad 2$

$$= 10 - \frac{1}{20} - \frac{1}{8c\sqrt{c}} \qquad 99 < c < 100$$

$$\sqrt{99} = 10 - 0{,}05 - \frac{1}{8c\sqrt{c}}$$

$$= 9{,}95 - \frac{1}{8c\sqrt{c}} < 9{,}95$$

$\sqrt{99} \approx 9{,}95$ per eccesso

$$81 < 99 < c < 100$$

$$\frac{1}{81\sqrt{81}} > \frac{1}{99\sqrt{99}} > \frac{1}{c\sqrt{c}} > \frac{1}{100\sqrt{100}}$$

$$\frac{1}{9^3} > \frac{1}{c\sqrt{c}} > \frac{1}{10^3}$$

$$-\frac{1}{8\cdot 9^3} < -\frac{1}{8c\sqrt{c}} < -\frac{1}{8\cdot 10^3}$$

$$9{,}95 - \frac{1}{8 \cdot 9^3} < \sqrt{99} < 9{,}95 - \frac{1}{8c\sqrt{c}} < 9{,}95 - \frac{1}{8 \cdot 10^3}$$

$$\sqrt{99} < 9{,}95$$

$$\left|\sqrt{99} - 9{,}95\right| < \frac{1}{8 \cdot 9^3} < \frac{1}{5000}$$

$$\begin{array}{r} 81 \\ \hline 9 \\ \hline 729 \\ \hline 8 \\ \hline 5832 \end{array}$$