Taller #11

Nombre = Vladimyr Gonzalez
Fecha = 21/03/2021
ID = U00131644

1) $\tilde{x} = 1,5$, $\Delta\tilde{x} = 0,05$

$x \in [x - \Delta x, x + \Delta x]$

$x \in [1,45 , 1,55]$

$= f(x) = 1,25 x^4 - x^3 + 1,5 x^2 - 2x + 4,5$

$f'(x) = 5x^3 - 3x^2 + 3x - 2$

$= f(1,5) = 1,25 \cdot 1,5^4 - 1.5^3 + 1,5 \cdot 15^2 - 2 \cdot 1.5 + 4,5$

$f(1,5) = 7,828125$

$= \Delta f(\tilde{x}) = |f'(\tilde{x})| \Delta x$

$\Delta f(1,5) = |5 \cdot 1,5^3 - 3 \cdot 1,5^2 + 3 \cdot 1.5 - 2| \cdot 0,05$

$\Delta f(1,5) = 0,63125$

$= f(x) \in [f(\tilde{x}) - \Delta f(\tilde{x}) + \Delta f(\tilde{x})]$

$f(x) \in [7.828125 - 0,63125, 7,828125 + 0,63125]$

$f(x) \in [7.196875 , 8.459375]$

2) $\tilde{x} = \pi/4$, $\Delta\tilde{x} = 0,005$

$x \in [x - \Delta x, x + \delta x]$

$x \in [0,780598\,1634, 0,790398\,1634]$

$= f(x) = \cos x \cdot \ln(2x)$

$f'(x) = -\sen(x) \cdot \ln(2x) + \cos(x)/x$

$= f(\frac{\pi}{4}) = \cos \frac{\pi}{4} \cdot \ln(2 \frac{\pi}{4})$

$f(\frac{\pi}{4}) = 0,3193171432$

$= \Delta f(\tilde{x}) = |f'(x^2)| \Delta x$

$\Delta f(\frac{\pi}{4}) = \left| \sen(\frac{\pi}{4}) \cdot \ln(2\frac{\pi}{4}) + \frac{\cos(\pi/4)}{\frac{\pi}{4}} \right| \cdot 0,005$

$\Delta f(\frac{\pi}{4}) = 2,9049956 \times 10^{-3}$

$= f(x) \in [f(\tilde{x}) \cdot \Delta f(\tilde{x}), f(\tilde{x}) + \Delta f(\tilde{x})]$

$f(x) \in [0,3193171932 - 2,9049956 \times 10^{-3}, 0,3193171932 + 2,9049956 \times 10^{-3}]$

$f(x) \in [0,3164121976, 0,3222221888]$