Tarea #6, tarea grupal

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Usando la diferencial
Aproximar:

$\sqrt{83}$

$f(x) = \sqrt{x}, f'(x) = \dfrac{1}{2\sqrt{x}}$

$a = 81, \Delta x = 2$

$f(81 + 2) = f(81) + f'(81) \cdot 2$

$\sqrt{83} = \sqrt{81} + \dfrac{1}{2\sqrt{81}} \cdot 2$

$= 9 + \dfrac{1}{18} \cdot 2$

$= 9 + \dfrac{1}{9}$

$= \dfrac{81}{9} + \dfrac{1}{9}$

$= \dfrac{82}{9} \approx 9, 11...$

$\log_2 33$

$$f(x) = \log_2 x, f'(x) = \frac{1}{x \ln 2}$$

$$a = 32, \Delta x = 1$$

$$f(32 + 1) = f(32) + f'(32) \cdot 1$$

$$\log_2 33 = \log_2 32 + \frac{1}{32 \ln 2}$$

$$= 5 + \frac{1}{32 \ln 2} \approx 5,04...$$

$\sqrt[3]{7}$

$f(x) = \sqrt[3]{x}, f'(x) = \dfrac{1}{3\sqrt[3]{x^2}}$

$a = 8, \Delta x = 1$

$f(8-1) = f(8) + f'(8) \cdot 1$

$\sqrt[3]{8-1} = \sqrt[3]{8} + \dfrac{1}{3\sqrt[3]{8^2}} \cdot 1$

$= 2 + \dfrac{1}{3\sqrt[3]{64}}$

$= 2 - \dfrac{1}{12}$

$= \dfrac{24}{12} - \dfrac{1}{12}$

$= \dfrac{23}{12} \approx 1,9...$

$$\sin(46°), 46° \longrightarrow \frac{23\pi}{90} rad$$

$$\sin(\frac{23\pi}{90})$$

$$f(x) = \sin(x), f'(x) = \cos(x)$$

$$a = \frac{\pi}{4}, \Delta x = \frac{\pi}{180}$$

$$f(\frac{\pi}{4} + \frac{\pi}{180}) = f(\frac{\pi}{4}) + f'(\frac{\pi}{4}) \cdot \frac{\pi}{180}$$

$$= \sin(\frac{\pi}{4}) + \cos(\frac{\pi}{4}) \cdot \frac{\pi}{180}$$

$$= \frac{\sqrt{2}}{2} + \frac{\sqrt{2}}{2} \cdot \frac{\pi}{180}$$

$$= \frac{\sqrt{2}}{2} + \frac{\pi\sqrt{2}}{360}$$

$$= \frac{180\sqrt{2}}{360} + \frac{\pi\sqrt{2}}{360}$$

$$= \frac{180\sqrt{2} + \pi\sqrt{2}}{360}$$

$$= \frac{(180 + \pi)\sqrt{2}}{360} \approx 0,72...$$