3d $f(x) = \sqrt{x^2+1} - \sqrt{x^2+4}$

LOSS OF PRECISION NEAR $|x| > 10$

w/ 4-DIGIT ARITHMETIC,

$f(10) = \sqrt{101} - \sqrt{104}$

$\cong 10.05 - 10.20$

$= 0.150$ } ONLY ONE CORRECT DIGIT

$f(10) = 0.148163\ldots$

REFORM $f(x)$ AS $\longrightarrow \sqrt{x^2+1} - \sqrt{x^2+4} \cdot \dfrac{\sqrt{x^2+1} + \sqrt{x^2+4}}{\sqrt{x^2+1} + \sqrt{x^2+4}} = \ldots$

$\ldots = \dfrac{x^2+1-x^2-4}{\sqrt{x^2+1} + \sqrt{x^2+4}} = \boxed{-\dfrac{3}{\sqrt{x^2+1} + \sqrt{x^2+4}}}$

NOW, $f(10) \cong -\dfrac{3}{10.05 + 10.20} \cong 0.1481$

ALL 4 CORRECT

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$f(1000) = -1.49999\ldots \times 10^{-3}$