

3
a

WHEN $x \approx \pi$, ~~cancel~~
LOSS OF SIGNIFICANT DIGITS OCCURS:

$$\begin{aligned} f(3.141) &= 1.000 + \cos(3.141) \\ &\approx 1.000 - 0.9999 \text{ (w/ rounding)} \\ &= 1 \times 10^{-4} \end{aligned}$$

$f(x)$ SHOULD BE REFORMULATED AS

$$f(x) = 2 \cos^2\left(\frac{x}{2}\right)$$

SO THAT NEAR $x = \pi$,

$$f(3.141) = 2 \cos^2\left(\frac{3.141}{2}\right)$$

$$\approx 0.000$$