(*Hw* 01 *Question* − 3) *for Question* 4 *on book*

Let $f(x) = -x^3 - \cos(x)$. *With* $p_0 = -1$ and $p_1 = 0$, *find* $p3$.

a. *Use the Secant method*.

→ $p_n = p_{n-1} - f(p_{n-1})\dfrac{(p_{n-1} - p_{n-2})}{f(p_{n-1}) - f(p_{n-2})}$

→ $p_2 = p_1 - f(p_1)\dfrac{(p_1 - p_0)}{f(p_1) - f(p_0)} = \dfrac{-f(0)}{f(0) - f(-1)} = -0.6851$

→ $p_3 = p_2 - f(p_2)\dfrac{(p_2 - p_1)}{f(p_2) - f(p_1)} = -0.6851 - \dfrac{f(-0.6851)(-0.6851 - 0)}{f(-0.6851) - f(0)} = -1.252$

b. *Use the method of False Position*.

I did ' nt know how to *solve this so I write a solution that I found on Internet . So it ' s not my own*

By using p_2 and p_0 in *the secant method , we can solve it according* to *false Position . answer*

→ $p_3 = p_2 - \dfrac{f(p_2)(p_2 - P_0)}{f(p_2) - f(p_0)}$

→ $p_3 = \dfrac{1}{\cos(-1) - 2} - \dfrac{\dfrac{-1}{(\cos(-1) - 2)^3} - \cos\left(\dfrac{1}{\cos(-1) - 2}\right)\left(\dfrac{1}{\cos(-1) - 2}\right)}{\dfrac{-1}{(\cos(-1) - 2)^3} - \cos\left(\dfrac{-1}{(\cos(-1) - 2)^3}\right) + 1}$

→ $p3 = -0.84136$