SOLUTION

MATH 321-172 HOMEWORK #5

EXERCISE 2.3

Q:2 $f(x) = -x^3 - \cos x$ , $p_0 = -1$

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

$$p_1 = p_0 - \frac{f(p_0)}{f'(p_0)} = 1 - \frac{-1 - \cos 1}{-3 + \sin 1} = +0.88803$$

$$p_2 = p_1 - \frac{f(p_1)}{f'(p_1)} = -0.86457$$

$p_0 = 0$ cannot be used because

$f'(p_0) = 0$

---

Q:4a $f(x) = -x^3 - \cos x$ $p_0 = -1$, $p_1 = 0$

$$p_2 = p_1 - \frac{(p_1 - p_0)\, f(p_1)}{f(p_1) - f(p_0)}$$

$$= 0 - \frac{(0+1)\, f(0)}{f(0) - f(-1)} = -0.6851$$

$$p_3 = p_2 - \frac{(p_2 - p_1)\, f(p_2)}{f(p_2) - f(p_1)} = -1.2521$$

---

# HOMEWORK #5 MATLAB

Q: 6a Root = 1.8293836 i = 6

Q: 8a Root = 1.8293836 i = 8

---