**Solution**

**Homework #5**

**Exercise 2.3**

**Q:2** \[ f(x) = -x^3 - \cos x \quad , \quad p_0 = -1 \]
\[ f'(x) = -3x^2 + \sin x \]
\[ p_1 = p_0 - \frac{f(p_0)}{f'(p_0)} = 1 - \frac{-1 - \cos(1)}{-3 + \sin 1} = 0.98803 \]
\[ p_2 = p_1 - \frac{f(p_1)}{f'(p_1)} = -0.8657 \]

\[ p_0 = 0 \text{ cannot be used because} \quad f'(p_0) = 0 \]

**Q:4a** \[ f(x) = -x^3 - \cos x \quad p_0 = -1, \quad p_1 = 0 \]
\[ p_2 = p_1 - \frac{(p_1 - p_0) \ f(p_1)}{f(p_1) - f(p_0)} \]
\[ = 0 - \frac{(0 - 4) \ f(0)}{f(0) - f(-1)} = -0.6851 \]
\[ p_3 = p_2 - \frac{(p_2 - p_1) \ f(p_2)}{f(p_2) - f(p_1)} = -1.2521 \]
Homework #5  MATLAB

Q. 6a  Root = 1.8293836  i = 6

Q. 8a  Root = 1.8293836  i = 8