Home Work:

1. Use Newton's method to find the solution for the following functions:
   a. $\boldsymbol{f(x) = x^2 - x - 1}$, $\boldsymbol{x_0 = 1}$
   b. $\boldsymbol{f(x) = x^3 - 7x^2 + 8x - 3}$, $\boldsymbol{x_0 = 5}$
   c. $\boldsymbol{f(x) = xcos(x) - x^2}$, $\boldsymbol{x_0 = 1}$
2. Use python code to build a function that calculate the approximate solution of a function using Newton's method.
   a. Think about function arguments.
   b. Choose the suitable stop criteria.
   c. Use your function to solve the above equations.
3. Calculate the gradient for the following functions:
   a. $\boldsymbol{f(x, y) = x^2 y}$ at (3,2)
   b. $\boldsymbol{f(x, y, z) = xye^{x^2+z^2-5}}$ at (1,3, -2)