Note: Show all your operations in detail. The solutions that do not have enough details will be graded with zero points.

1. (P.84 Q.2c-4c) Find the solution of $\sin(3x)+3e^{-2x}\sin(x)-3e^{-x}\sin(2x)-e^{-3x}=0$ for $3 \leq x \leq 4$ accurate to within 10^{-5} using
   (a) Newton's Method,
   (b) Modified Newton's Method.
2. (P.99 Q.2d-4d) Find approximations to within 10^{-5} to all the zeros of $f(x) = x^5 + 11x^4 - 21x^3 - 10x^2 - 21x - 5$ by
   (a) first finding the real zeros using Newton's Method and then reducing to polynomials of lower degree to determine any complex zeros,
   (b) Müller's Method.
3. (P.64 Q.7) Use a fixed-point iteration method to determine a solution accurate to within 10^{-2} for $x^4 - 3x^2 - 3 = 0$ on $[1, 2]$. Use $p_0 = 1$.