

Problem 1 (50 pts)

The function $f(x) = x^4 - 100$ has a root located between 0 and 5. Fill in the tables below for the first three iterations of the Bisection Method and the False Position method. Express all answers rounded to four digits after the decimal point.

Iteration	x_l	x_u	x_r	$f(x_l)$	$f(x_r)$	$ e_A , \%$
1	2.0000	5.0000				
2						
3						

Bisection Method

Iteration	x_l	x_u	x_r	$f(x_l)$	$f(x_u)$	$f(x_r)$	$ e_A , \%$
1	2.0000	5.0000					
2							
3							

False Position Method

Problem 2 (50 pts)

Consider the function $f(x) = x^3 + x - 10$.

- A) Use the Simple One Point Iteration Method with $g(x) = (10-x)/x^2$ and fill in the table below. Stop when $|e_A| < 1\%$ or $i > 3$ whichever occurs first. In the column for E_T , R is the true root of $f(x) = 0$ which you should be able to determine. Round all answers to 4 places after the decimal point for both Parts A) and B).

i	x_i	$E_T = R - x_i$	$ e_A , \%$
0	1.9500		
1			
2			
3			

- B) Use the Newton-Raphson Method and fill in the table below.

i	x_i	$f(x_i)$	$f'(x_i)$
0	0.0000		
1			
2			