

Set A

Problem Statement: Determine the real root x_{root} of the equation: $f(x) = x^5 - 3x^2 - 100$ using Newton Raphson Method. Employ initial guess of $x_0 = 2$ and iterate until $f(x_{root}) = 0$.

Tasks:

1. Write a program using Newton Raphson method to locate the approximate root of the function $(x) = x^5 - 3x^2 - 100$ with initial guess $x_0 = 2$.
2. Iterate until $f(x_{root}) = 0$ and use Horner's method to find value of $f(x_{root})$.
3. If after n iterations $f(x_{root})$ return 0 then print Root found using Newton Raphson method is exact root.
4. Use Horner's method to evaluate the functions.
5. Use appropriate math function for your code.
6. Print the your output as the following output format.

Sample Input/output:

```
ENTER THE TOTAL NO. OF POWER: 5
x^0::
x^1::
x^2::
x^3::
x^4::
x^5::
THE POLYNOMIAL IS ::: 1x^5 + 0x^4 + 0x^3 -3 x^2 -0x^1 -100
INITIAL X1---->3
After n iteration the Root is:
Value Return by Horner's Method is : 0.000000
Root Found Using Newton Raphson Method is Exact Root
```

Set B

Problem Statement: Determine the real root x_{root} of the equation: $f(x) = x^5 - 3x^2 - 100$ using Secant Method. Employ initial guess of $x_0 = 2$ and $x_1 = 4$ and iterate until $f(x_{root}) = 0$.

Tasks:

1. Write a program using Secant method to locate the approximate root of the function $f(x) = x^5 - 3x^2 - 100$ with initial guess $x_0 = 2$ and $x_1 = 4$.
2. Iterate until $f(x_{root}) = 0$ and use Horner's method to find value of $f(x_{root})$.
3. If after n iterations $f(x_{root})$ return 0 then print Root found using Secant method is exact root.
4. Use Horner's method to evaluate the functions.
5. Use appropriate math function for your code.
6. Print the your output as the following output format.

Sample Input/output:

```
ENTER THE TOTAL NO. OF POWER: 5
x^0::
x^1::
x^2::
x^3::
x^4::
x^5::
THE POLYNOMIAL IS ::: 1x^5 + 0x^4 + 0x^3 -3 x^2 -0x^1 -100
INITIAL X0---->2 and X1--->4
After n iteration the Root is:
Value Return by Horner's Method is : 0.000000
Root Found Using Secant Method is Exact Root
```

Set C

Problem Statement: Determine the real root x_{root} of the equation: $f(x) = x^5 - 3x^2 - 100$ using Fixed Point Iterations Method. Employ initial guess of $x_0 = 2$ and iterate until $f(x_{root}) = 0$.

Tasks:

1. Write a program using Fixed Point Iterations method to locate the approximate root of the function $f(x) = x^5 - 3x^2 - 100$ with initial guess $x_0 = 2$.
2. You must check for your $g(x), g(x)' < 0$, otherwise your process may not converge.
3. Iterate until $f(x_{root}) = 0$ and use Horner's method to find value of $f(x_{root})$.
4. If after n iterations $f(x_{root})$ return 0 then print Root found using Fixed Point Iterations method is exact root.
5. Use Horner's method to evaluate the functions.
6. Use appropriate math function for your code.
7. Print the your output as the following output format.

Sample Input/output:

```
ENTER THE TOTAL NO. OF POWER: 5
x^0::
x^1::
x^2::
x^3::
x^4::
x^5::
THE POLYNOMIAL IS : 1x^5 + 0x^4 + 0x^3 -3 x^2 -0x^1 -100
The g(x)function is:
INTIAL X0---->2
After n iteration the Root is:
Value Return by Horner's Method is: 0.000000
Root Found Using Fixed point iteration Method is Exact Root
```
