$Ques(1)$. Using Fibonacci search method, find the minimum of $\phi(x) = (x-2)^2$ with an error in the minimum point not more than 0.42 (Initial inteval $[1,3]$).

$Ques(2)$. Solve $Ques(1)$ using Golden section method. How many iterations does it required to obtain approximate minima with the same error bound(0.42)?

$Ques(3)$. Use Fibonacci search method to find minimum for $f(x) = 3x^2 - e^x$ over the interval $[0,1]$ with an error in optimal solution not more than 0.05.

$Ques(4)$. Solve $Ques(3)$ using Golden section method. How many iterations does it required to obtain approximate minima with the same error bound(0.05)?

$Ques(5)$. Use Golden section method to find within 10% of value of x in the interval that maximizes the function

$$f(x) = min\{x, 2x^2, 2 - 2x - x^2\}.$$

How many iterations are required?