**PEOPLE’S DEMOCRATIC REPUBLIC OF ALGERIA**

**MINISTRY OF HIGHER EDUCATION AND SCIENTIFIC RESEARCH**

**Badji Mokhtar-Annaba University**

**Department of Mathematics**

**Master 1: Exam**

**Year : 2021/2022**

**Exercise n° 1 : Write only in mathematical symbols**

1. **Limit** $x$ **minus the square root of** $(x$ **squared minus a squared) when** $x$ **tends to infinity equals zero.**
2. **If a and b are positive, then a to the power b plus b to the power a is greater than one.**
3. **One plus the Euler’s number to the power (the imaginary unit times pi) equals zero.**
4. **For b in the open interval one plus the infinity and a any real number, limit (x to the power a) over (b to the power x) when x tends to infinity equals zero**$.$
5. **The left-open and right-closed interval a b is the set of x such that x is greater than a and less than or equal to b.** {\displaystyle (a,b]=\{x\mid a<x\leq b\}}**.**

**Exercise n° 2 : Fill in the gaps by the following words : roots, iterative,** [**find**](https://en.wikipedia.org/wiki/Matrix_%28mathematics%29#Matrix_multiplication)**, solutions, critical**

[**Newton’s method**](https://en.wikipedia.org/wiki/Newton%27s_method)

 **In** [**calculus**](https://en.wikipedia.org/wiki/Calculus)**,** [**Newton’s method**](https://en.wikipedia.org/wiki/Newton%27s_method) **is an** [**--------- method**](https://en.wikipedia.org/wiki/Iterative_method) **for finding the** [**roots**](https://en.wikipedia.org/wiki/Zero_of_a_function) **of a** [**differentiable function**](https://en.wikipedia.org/wiki/Differentiable_function) ***F,*  which are solutions to the** [**equation**](https://en.wikipedia.org/wiki/Equation) ***F* (*x*) = 0. As such, Newton’s method can be applied to the** [**derivative**](https://en.wikipedia.org/wiki/Derivative) ***f* ′ of a** [**twice-differentiable function**](https://en.wikipedia.org/wiki/Smooth_function) ***f* to find the --------- of the derivative (solutions to *f* ′(*x*) = 0), also known as the** [**--------- points**](https://en.wikipedia.org/wiki/Critical_point_%28mathematics%29) **of *f*. These --------- may be minima, maxima, or saddle points. This is relevant in** [**optimization**](https://en.wikipedia.org/wiki/Mathematical_optimization)**, which aims to --------- (global) minima of the function *f*.**

{\displaystyle \int \_{a}^{b}f(x)\,dx.}***-Good Luck-***

**Remark: You must send me the answer before 1pm (13H) using my email: b\_hakima2000@yahoo.fr**