University of Echahid Hamma-Lakhdar – El-Oued
Exact sciences faculty - Mathematics department
First Semester English Exam – Master 1 – 24/01/2026 - Time : 1h30

Full Name : ……………………………………………………………………………………… Group : ……………..

Exercise 1: (8pts)

Let a and b (to be)………….. arbitrary positive integers. In general, it is not possible to divide b by a exactly; instead, the division usually (to produce)………………. a remainder. More precisely, when dividing b by a, we (to seek)…………….. a multiple of a that is as close as possible to b without exceeding it. For example, the integer 7 lies between the two consecutive multiples of 3,

$$2 \times 3 = 6 < 7 < 3 \times 3 = 9,$$

and we can therefore (to write)……………….. $7 = 2 \times 3 + 1$. In general, given any positive integers a and b, there (to exist)…………….. a unique integer q , called the quotient, such that qa is the largest multiple of a that is less than or equal to b. The difference between b and this multiple (to be) …………. denoted by r, and we obtain the decomposition $b = qa + r$, where the remainder r satisfies $r = 0,1, \dots, a - 1$.

1) Put the verbs between brackets in the correct form.
2) Find in the text synonyms (word with the same meaning) of the following words:
greatest=………………………., instance=…………………………., habitually=…………………………..
precisely=……..…………….,becoming bigger than= ………………….., represented=…………………..
3) How do we call the integer that has the uniqueness property in Euclidean division?
…….
4) How do we call the other integer that does not exceed the divisor?
………

Exercise 2: (6pts) Write the following expressions in English words:

$\sqrt{x^5} = y^2 - 8$ ………………………………………………………………………………………………

……

$\nexists x \in \mathbb{R}, x^3 = 3^x$ ....

....

$\bar{z} - z \in \mathbb{R}$ ....

....

$f'(x) = x^2$ ....

....

<u>Exercise 3</u>: **(6pts)** Write the following sentences using mathematical symbols

- All real numbers x satisfy that x squared is greater than or equal to zero.

....

- The limit of sine x over x as x tends to zero is equal to one.

....

- The integral from zero to one of x cubed with respect to x equals one quarter.

....

The modulus of the complex number z is equal to one

....

Good luck!

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………………………………..Solution……………………………..

Exercise 1: (9pts)

Let a and b (to be)…**are**…… arbitrary positive integers. In general, it is not possible to divide b by a exactly; instead, the division usually (to produce)…**produces**.. a remainder. More precisely, when dividing b by a, we (to seek) **seek**. a multiple of a that is as close as possible to b without exceeding it. For example, the integer 7 lies between the two consecutive multiples of 3,

$$2 \times 3 = 6 < 7 < 3 \times 3 = 9,$$

and we can therefore (to write).. **write…** $7 = 2 \times 3 + 1$. In general, given any positive integers a and b, there (to exist)…**exists…** a unique integer q , called the quotient, such that qa is the largest multiple of a that is less than or equal to b. The difference between b and this multiple (to be) …**is**… denoted by r, and we obtain the decomposition $b = qa + r$, where the remainder r satisfies $r = 0,1, \dots, a - 1$.

5) Put the verbs between brackets in the correct form.
6) Find in the text synonyms (word with the same meaning) of the following words:

greatest=…**Largest**…, instance=……**example**……, habitually=………**usually**…..

precisely=…**exactly**……,becoming bigger than= …**exceeding**., represented=…**denoted**…

7) How do we call the integer that has the uniqueness property in Euclidean division?

…………**We call that integer "the quotient"**……………………..

8) How do we call the other integer that does not exceed the divisor?

…………………………**We call that integer "the reminder"**…………………

Exercise 2: (6pts) Translate to English.

$\sqrt{x^5} = y^2 - 8$ ………… **The square root of x to the fifth power is equal to y squared minus eight.**

$\nexists x \in \mathbb{R}, x^3 = 3^x$ .... **There does not exist any real number x such that x cubed is equal to three to the power x.**

$\bar{z} - z \in \mathbb{R}$ .... **The complex conjugate of z minus z is a real number.**

$f'(x) = x^2$ .... **The derivative of the function f at x is equal to x squared.**

<u>Exercise 3</u>: (6pts) Write the following sentences using mathematical symbols

Write the following sentences using mathematical symbols

- All real numbers x satisfy that x squared is greater than or equal to zero.

$$\forall x \in \mathbb{R}, x^2 \geq 0$$

- The limit of sine x over x as x tends to zero is equal to one.

$$\lim_{x \to 0} \frac{\sin x}{x} = 1$$

- The integral from zero to one of x cubed with respect to x equals one quarter.

$$\int_0^1 x^3 dx = \frac{1}{4}$$

- The modulus of the complex number z is equal to one

$$|z| = 1$$