1.

a. The claim is accurate since any real number bigger than 2 is also greater than 1.

b. The claim is accurate because, for any real integer r, r2 always exceeds 4 if and only if │r│>2

4.

The sequence of digits is 0204.

One individual asserts that all of the 1s in the sequence above are to the left of all of the zeros.

The goal is to ascertain whether the assertion is accurate before supporting the conclusion.

The assertion is true.

Formally stating the claim,

Ɐx if x=1 and x is in the sequence 0204, then all of the 0s in the sequence are on the left of x.

The negation of the statement is, ⱻx such that x=1 and x is in the sequence 0204, and not all of the sequence's 0s are to the left of x.

The negation is false as the sequence does not contain 1.

Hence, the claim is true by default.

5.

The declaration can be seen below.

Only if they both offer the same lowest fare may you choose between the airlines.

The goal is to ascertain whether the statement ensures that a client will have the freedom to select between two carriers if they both provide the lowest rate, assuming that "only if" has its formal, logical meaning.

No, the assertion makes no guarantees.

"You may not select among carriers if they do not give the same lowest fare," is the informal interpretation.

Consequently, the claim is not a guarantee.

6.

The law is:

~(∀𝑥 ∈ 𝐷(∀𝑦 ∈ 𝐸(𝑃(𝑥, 𝑦)))≡ ∃𝑥 ∈ 𝐷(∃𝑦 ∈ 𝐸(~𝑃(𝑥,𝑦)))

Now, Left hand side of the equation is:

~(∀𝑥 ∈ 𝐷(∀𝑦 ∈ 𝐸(𝑃(𝑥, 𝑦)))

Along the sentence, gradually moving the negation from left to right

Applying law of negation on Ɐ statement

Negation of Ɐ is ⱻ, so we write the sentence as:

(ⱻx є D, (ⱻ y є E, (˜P(x, y)))

Hence, (˜ Ɐ x є D (Ɐ y є E (P(x, y)))) ≡ ∃𝑥 ∈ 𝐷 (∃𝑦 ∈ (~𝑃(𝑥,𝑦)))

8.

ⱻ Real number x such that Ɐ real numbers y, x y = y

This statement is accurate. The given condition is satisfied as long as the real number x = 1 is the only real number

7.

a. FALSE. “For all positive integers, there exist a positive integer, such that first integer is one more than second one."

Considering the integer x=1, this suggests, 1=y+1=>1 (which is not a positive integer)

Therefore, the statement is FALSE.

b. TRUE.

“For all integers, there exist an integer, such that first integer is one more than second one.”

Considering any random integer x. If so, there is an integer y such that for any integer x.

y = x-1

y + 1 = (x+1) + 1 = x

Hence, the statement is TRUE.

c. FALSE.

"For all real x, there exist a real y, such that their product is unit.”

Considering real number x=0, then for any real number y, xy=0.

Therefore, the statement is FALSE.

d. FALSE

“There exist real number x, such that for all real y, first number is one more than second one.”

When y=2

x=y+1

=2+1

=3

When y=3

x=y+1

=3+1

=4

There is no fixed such that, for any real number y, x=y+1.

Hence, the claim is FALSE.

2.

a. a>0 and b>0 => ab>0

Then, the given statement can be written as:

"For all a and b that belongs to R such that if a > 0 and b > 0, then ab > 0"

Then, P(x): a>0 and b>0 Q(x): ab > 0

If a = 1 and b = 2 then the multiples of a and b is 2, which is greater than 0.

Hence, the above statement is true

b. a < 0 and b < 0 ⬄ ab > 0

The given statement can be written as in the form of

"For all a and b that belongs to R such that a < 0 and b < 0 if and only if ab > 0"

Then, P(x): ab > 0, Q(x) a < 0 and b < 0

Suppose a = 2 and b = 4, then multiples of a and b is 2 \* 4 = 8 which is true to ab>0

But, in the statement of Q(x), a < 0 and b < 0 which will be 2 < 0 and 4 < 0 which is not true.

Therefore, the above statement is false because its conclusion is not true.

3. For any number to be even it should be a multiple of 2

Let x and y be two different integers

Then, a – b = 2x and b – c = 2y #from odd-even rule

So, here a = 2x + b and c = - 2y – b # derived form of a – b = 2x and b – c = 2y

Now, a – c = 2x + b – 2y – b = 2x – 2y = 2(x – y), which is in multiple of 2

Hence it is proved that for all integers a, b and c, if a-b is even and b-c is even, then a-c is even