

NCERT Solutions for Class-XI Maths

Chapter-14 Exercise-14.2 NCERT Math Class 11

1. Write the negation of the following statements:

- (i) Chennai is the capital of Tamil Nadu.
- (ii) $\sqrt{2}$ is not a complex number.
- (iii) All triangles are not equilateral triangle.
- (iv) The number 2 is greater than 7.
- (v) Every natural number is an integer.

1. (i) Chennai is the capital of Tamil Nadu.

Explanation:-

Chennai is **not** the capital of Tamil Nadu.

Or

It is false to say that Chennai is the capital of Tamil Nadu.

Or

It is not the case that Chennai is the capital of Tamil Nadu.

(ii) $\sqrt{2}$ is not a complex number.

Explanation:-

$\sqrt{2}$ is a complex number.

Or

It is false to say that $\sqrt{2}$ is not a complex number.

Or

It is not the case that $\sqrt{2}$ is not a complex number.

(iii) All triangles are not equilateral triangle.

Explanation:-

All triangles **are** equilateral triangle.

Or

It is false to say that all triangles are not equilateral triangle.

Or

It is not the case that all triangles are not equilateral triangle.

(iv) The number 2 is greater than 7.

Explanation:-

The number 2 is **not greater** than 7.

Or

It is false to say that the number 2 is greater than 7.

Or

It is not the case that the number 2 is greater than 7.

(v) Every natural number is an integer.

Explanation:-

Every natural number **is not** an integer.

Or

It is false to say that Every natural number is an integer.

Or

It is not the case that Every natural number is an integer.

2. Are the following pairs of statements negations of each other?

(i) The number x is not a rational number.

The number x is not an irrational number.

(ii) The number x is a rational number.

The number x is an irrational number.

2. (i) The negation of the first statement is "the number x is a rational number".

This is same as the second statement. This is because if a number is not an irrational number, then it is a rational number.

Therefore, the given statements are negations of each other.

(ii) The negation of the first statement is "the number x is not a rational number". This means that the number x is an irrational number, which is the same as the second statement. Therefore, the given statements are negations of each other.

3. Find the component statements of the following compound statements and check whether they are true or false.

(i) Number 3 is prime or it is odd.

(ii) All integers are positive or negative.

(iii) 100 is divisible by 3, 11 and 5 .

3. (i) Number 3 is prime or it is odd.

Explanation:-

The component statements are:-

p: Number 3 is prime.

q: It is odd.

The connecting word is '**Or**'

We know that number 3 is prime

Hence p is true

We know that number 3 is odd

Hence q is true.

(ii) All integers are positive or negative.

Explanation:-

The component statements are:-

p: All integers are positive.

q: All integers are negative.

The connecting word is '**Or**'

Since all integers are not positive

Hence p is false

Since all integers are not negative

Hence q is false.

(iii) 100 is divisible by 3, 11 and 5.

Explanation:-

The component statements are:-

p: 100 is divisible by 3.

q: 100 is divisible by 11.

r: 100 is divisible by 5.

The connecting word is '**and**'

Since, p is false, because 100 is not divisible by 3

q is false, because 100 is not divisible by 11

r is true, because 100 is divisible by 5

Hence p & q are false & r is true.



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