

Mathematics

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(Chapter – 5) (Introduction to Euclid's Geometry)(Exemplar Problems)
(Class – IX)

Exercise 5.4

Question 4:

Read the following two statements which are taken as axioms:

- (i) If two lines intersect each other, then the vertically opposite angles are not equal.
- (ii) If a ray stands on a line, then the sum of two adjacent angles so formed is equal to 180° .

Is this system of axioms consistent? Justify your answer.

Answer 4:

A system of axiom is called consistent, if there is no statement which can be deduced from these axioms such that it contradicts any axiom.

We know that, if two lines intersect each other, then the vertically opposite angles are equal. It is a theorem, so given statement (i) is false and not an axiom.

Also, we know that, if a ray stands on a line, then the sum of two adjacent angles so formed is equal to 180° . It is an axiom. So, given statement (ii) is true and an axiom.

Thus, in given statements, first is false and second is true.

Hence, given system of axioms is not consistent.

