

Mathematics

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

Exercise 5.4

Question 3:

Read the following statements which are taken as axioms:

- (i) If a transversal intersects two parallel lines, then corresponding angles are not necessarily equal.
- (ii) If a transversal intersect two parallel lines, then alternate interior angles are equal.

Is this system of axioms consistent? Justify your answer.

Answer 3:

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 a transversal intersects two parallel lines, then each pair of corresponding angles are equal, which is a theorem. So, Statement (i) is false and not an axiom.

Also, we know that, if a transversal intersects two parallel line, then each pair of alternate interior angles are equal. It is also a theorem. So, Statement (ii) is true and an axiom.

Thus, in given statements, first is false and second is an axiom.

Hence. Given system of axioms is not consistent.

