A Book of Abstract Algebra | (2nd Edition)

Chapter 23, Problem 4EC

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Problem

Prove the following for all integers *a*, *b*, *c*, *d* and all positive integers *m* and *n:*

$a \equiv b \pmod 1$.

Step-by-step solution

Step 1 of 3

Here, objective is to prove that $a \equiv b \pmod 1$

Comment

Step 2 of 3

Consider a, b are integers, *m* is a positive integer.

If *m* divides $a - b$, then *a* is congruent to *b* modulo *m* which is represented by $a = b(\mathrm{mod\ m})$

Comment

Step 3 of 3

Consider a, b are integers

$m = 1$ is a positive integer.

It is clear that 1 divides $a - b$

Then, a is said to be congruent to b modulo 1, which is represented by

$$a \equiv b \pmod{1}$$

Hence, proved

Comment