

A Book of Abstract Algebra | (2nd Edition)

Chapter AB, Problem 8E

Bookmark

Show all steps: ☒ ON

Problem

Prove that the following are true for any integers a , b , and c :

If there are integers k and l such that $ka + lb = 1$, then a and b are relatively prime.

Step-by-step solution

Step 1 of 2

Objective:-

The objective is to prove that if there are integers k and l such that $ka + lb = 1$, then a and b are relatively prime.

[Comment](#)

Step 2 of 2

Proof:-

Let there are integers k and l such that:-

$$ka + lb = 1 \quad \dots(1)$$

Let us consider the theorem.

Theorem:-Any two nonzero integers r and s have a unique positive greatest common divisor t . Moreover, t is equal to a "Linear combination" of r and s . That is,

$$t = kr + ls \text{ for some integer } k \text{ and } l \quad \dots(2)$$

Let us compare the equation (1) and (2).

$$t = 1.$$

According to the above theorem 1 is greatest common divisor of a and b . The integers a and b has not common divisor except 1. Thus, a and b are relatively prime.

Proved

[Comment](#)

COMPANY

About Chegg
Chegg For Good
College Marketing
Corporate Development
Investor Relations
Jobs
Join Our Affiliate Program
Media Center
Site Map

LEGAL & POLICIES

Advertising Choices
Cookie Notice
General Policies
Intellectual Property Rights
Terms of Use
Global Privacy Policy
Honor Code
Honor Shield

CHEGG PRODUCTS AND SERVICES

Cheap Textbooks
Chegg Coupon
Chegg Play
Chegg Study Help
College Textbooks
eTextbooks
Flashcards
Learn
Chegg Math Solver
Mobile Apps
Sell Textbooks
Solutions Manual
Study 101
Textbook Rental
Used Textbooks
Digital Access Codes
Chegg Money

CHEGG NETWORK

EasyBib
Internships.com
Thinkful

CUSTOMER SERVICE

Customer Service
Give Us Feedback
Help with eTextbooks
Help to use EasyBib Plus
Manage Chegg Study Subscription
Return Your Books
Textbook Return Policy