Show All Solutions

Rosen, Discrete Mathematics and Its Applications, 7th edition
Extra Examples
Section 9.6—Partial Orderings

Extra Examples — *Page references correspond to locations of Extra Examples icons in the textbook.*

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p.619, icon at Example 1
#1. Let $A = \{(x, y) \mid x, y \text{ integers}\}$. Define a relation R on A by the rule

$$(a, b)R(c, d) \ \leftrightarrow \ a \leq c \ \text{ or } \ b \leq d.$$

Determine whether R is a partial order relation on A.

See Solution

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p.619, icon at Example 1
#2. Let $A = \{(x, y) \mid x, y \text{ integers}\}$. Define a relation R on A by the rule

$$(a, b)R(c, d) \ \leftrightarrow \ a = c \text{ or } b = d.$$

Determine whether R is a partial order relation on A.

See Solution

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p.619, icon at Example 4
#1. Let R be the relation on the set of words in the English language where xRy if x precedes (that is, comes before) y in the dictionary. Show that R is not a partial ordering.

See Solution

p.624, icon at Example 20

#1. Referring to this Hasse diagram of a partially ordered set, find the following:

(a) all upper bounds of $\{d, e\}$.

(b) the least upper bound of $\{d, e\}$.

(c) all lower bounds of $\{a, e, g\}$.

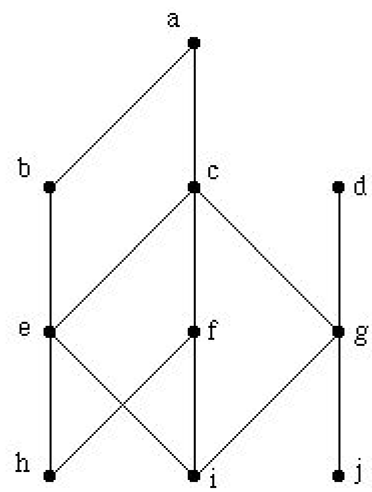
(d) the greatest lower bound of $\{a, e, g\}$.

(e) greatest lower bound of $\{b, c, f\}$.

(f) least upper bound of $\{h, i, j\}$.

(g) greatest lower bound of $\{g, h\}$.

(h) least upper bound of $\{f, i\}$.



See Solution