

What is the reflexive closure of the relation $R = \{(a, b) \mid a < b\}$ on the set of integers?

What is the symmetric closure of the relation $R = \{(a, b) \mid a > b\}$ on the set of positive integers?

Let R be the relation on the set of all people in the world that contains (a, b) if a has met b . What is R^n , where n is a positive integer greater than one? What is R^* ?

Let R be the relation on the set of all states in the United States that contains (a, b) if state a and state b have a common border. What is R^n , where n is a positive integer? What is R^* ?

Find the zero-one matrix of the transitive closure of the relation R where

$$\mathbf{M}_R = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 & 0 \\ 1 & 1 & 0 \end{bmatrix}.$$

Let R be the relation with directed graph shown in Figure 3. Let a, b, c, d be a listing of the elements of the set. Find the matrices $\mathbf{W}_0, \mathbf{W}_1, \mathbf{W}_2, \mathbf{W}_3$, and \mathbf{W}_4 . The matrix \mathbf{W}_4 is the transitive closure of R .

